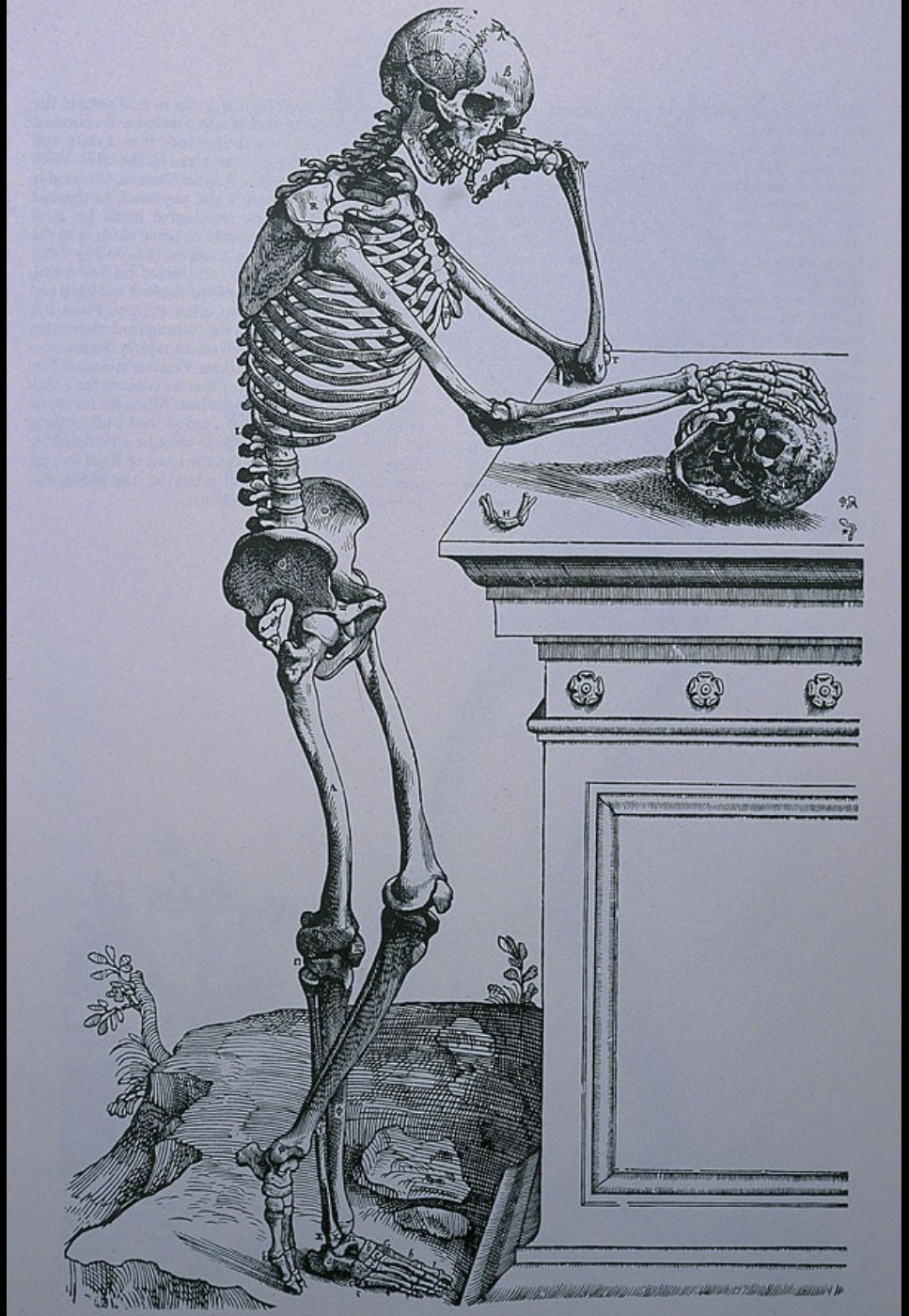
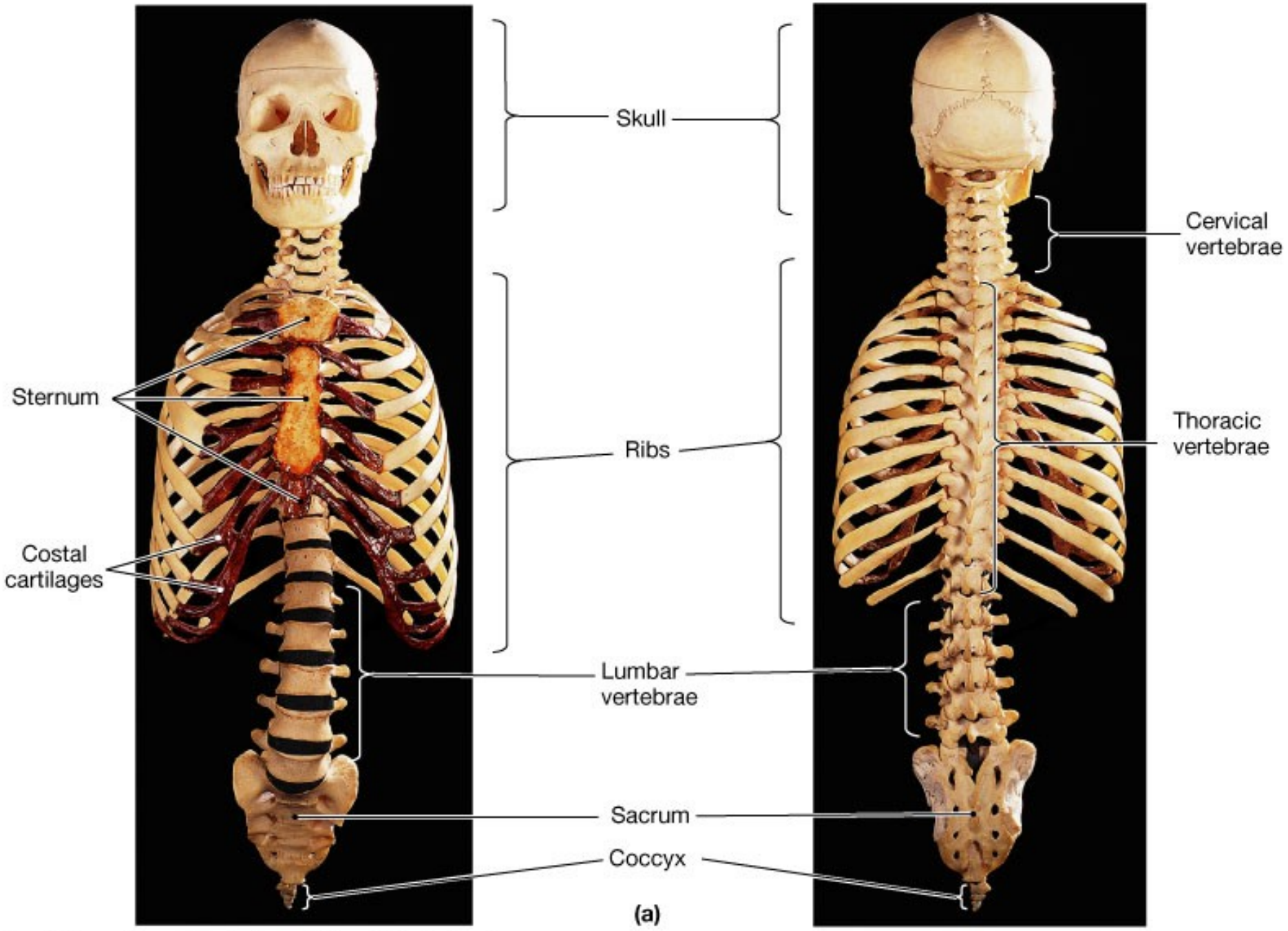
BONES

Axial Skeleton





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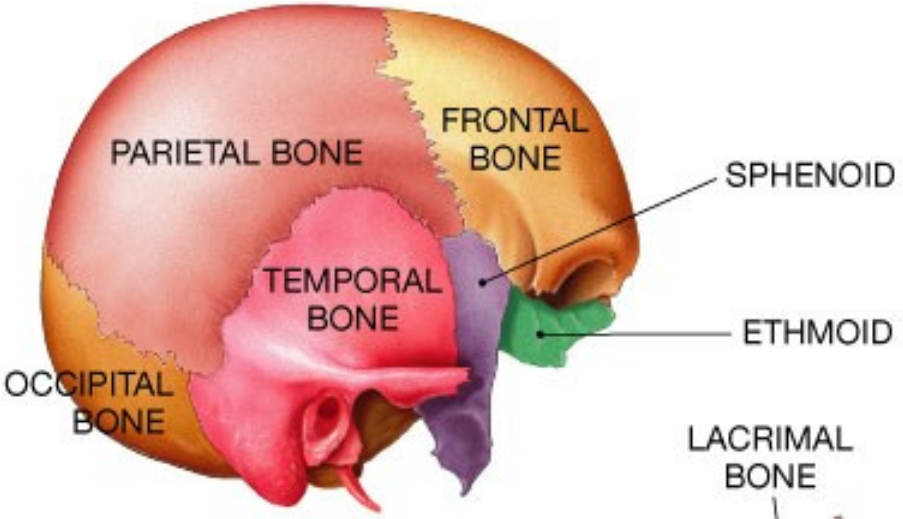
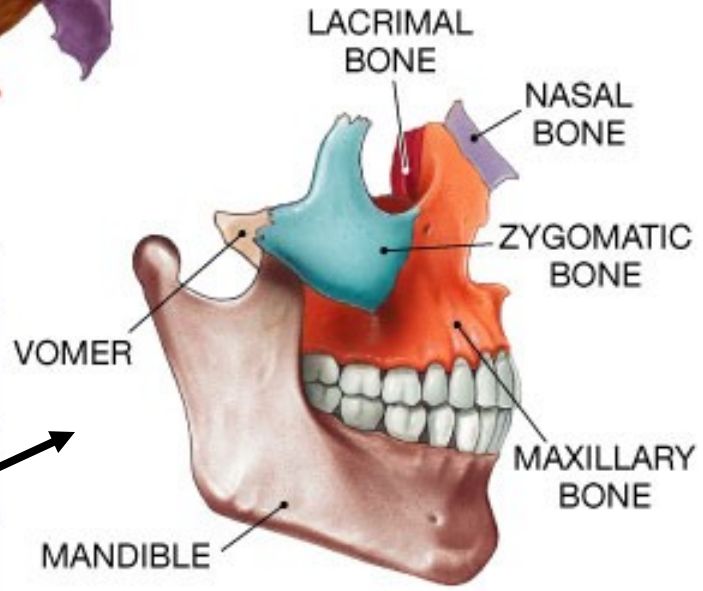


Cranial Bones



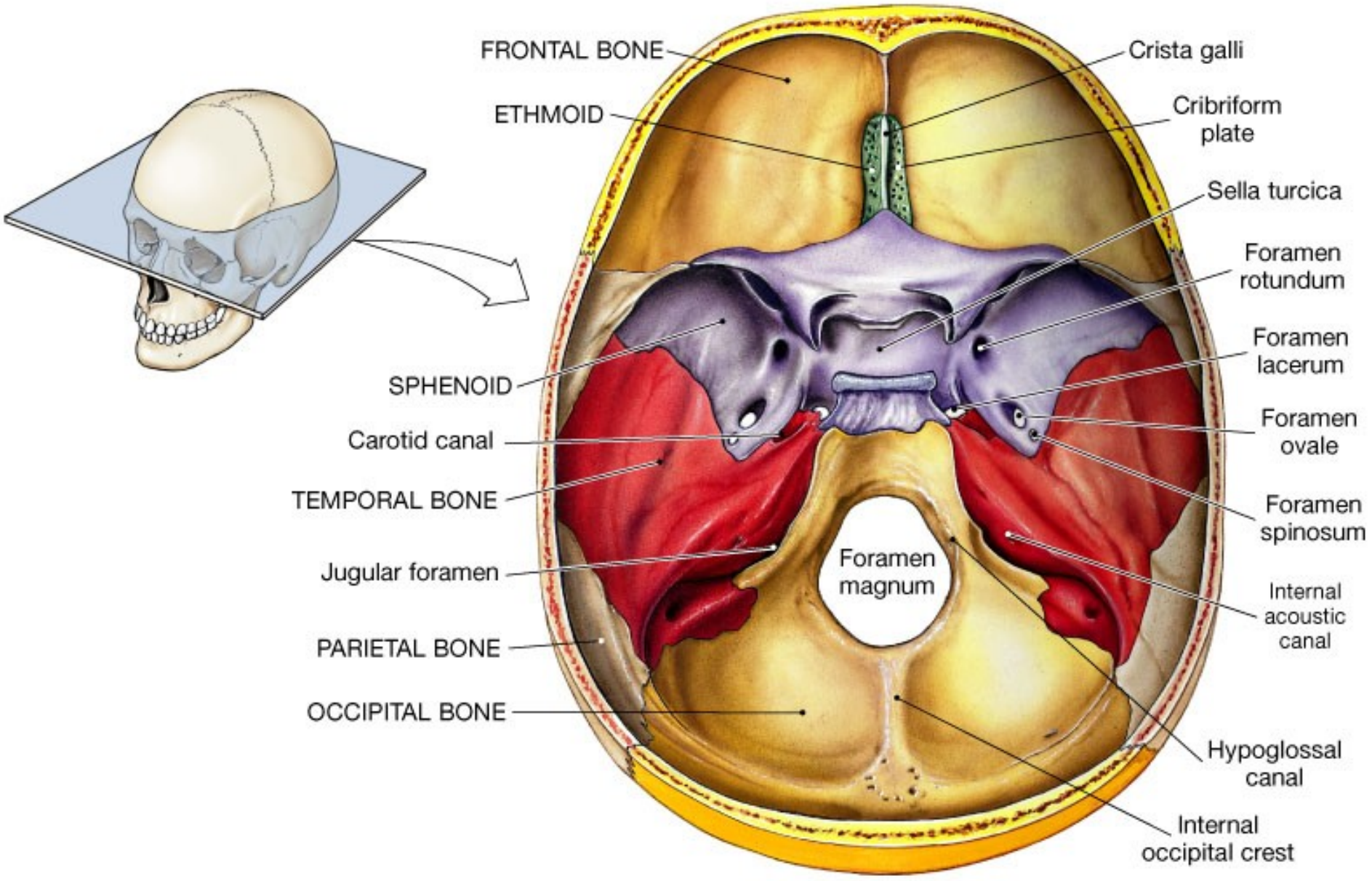
Facial Bones

Cranial Bones

- Cranial bones create the cranial cavity.

- Brain in direct contact with protective membrane in between bones and brain called the **meninges**.

1 frontal bone	1 occipital bone
2 parietal bones	1 sphenoid bone
2 temporal bones	1 ethmoid bone



(b) Horizontal section

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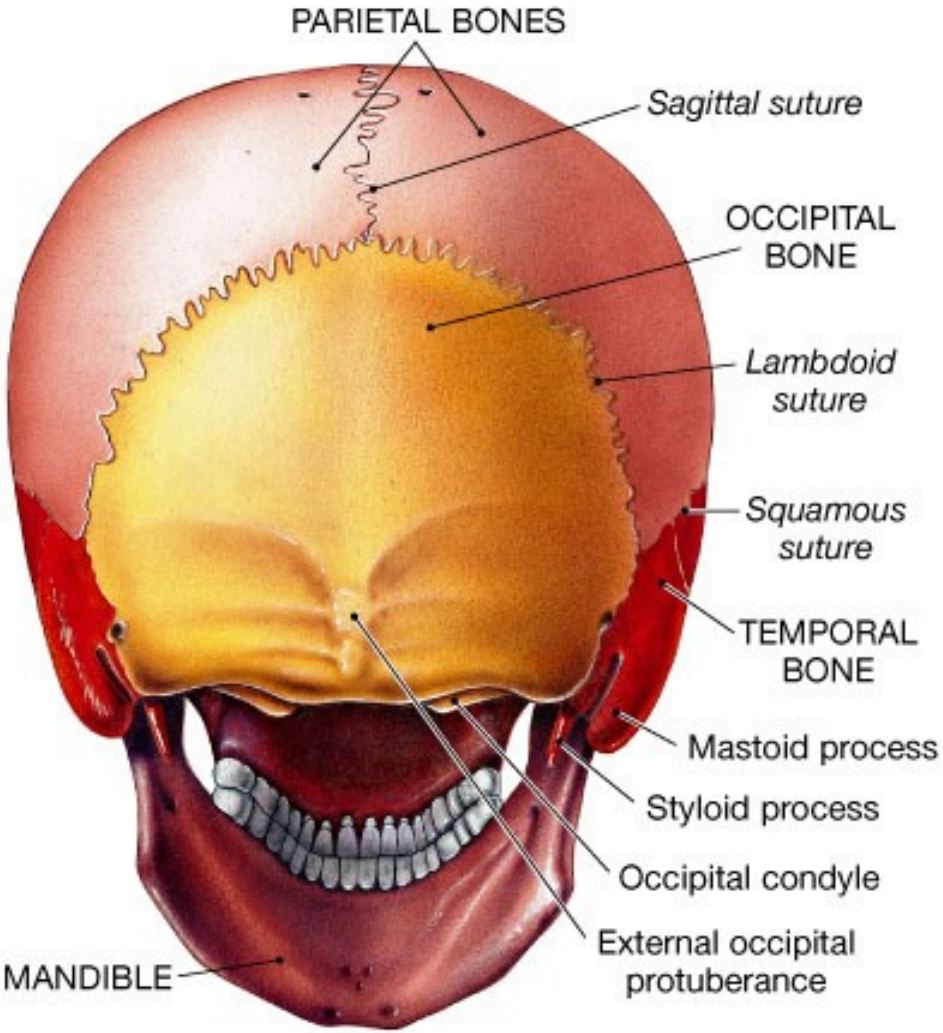
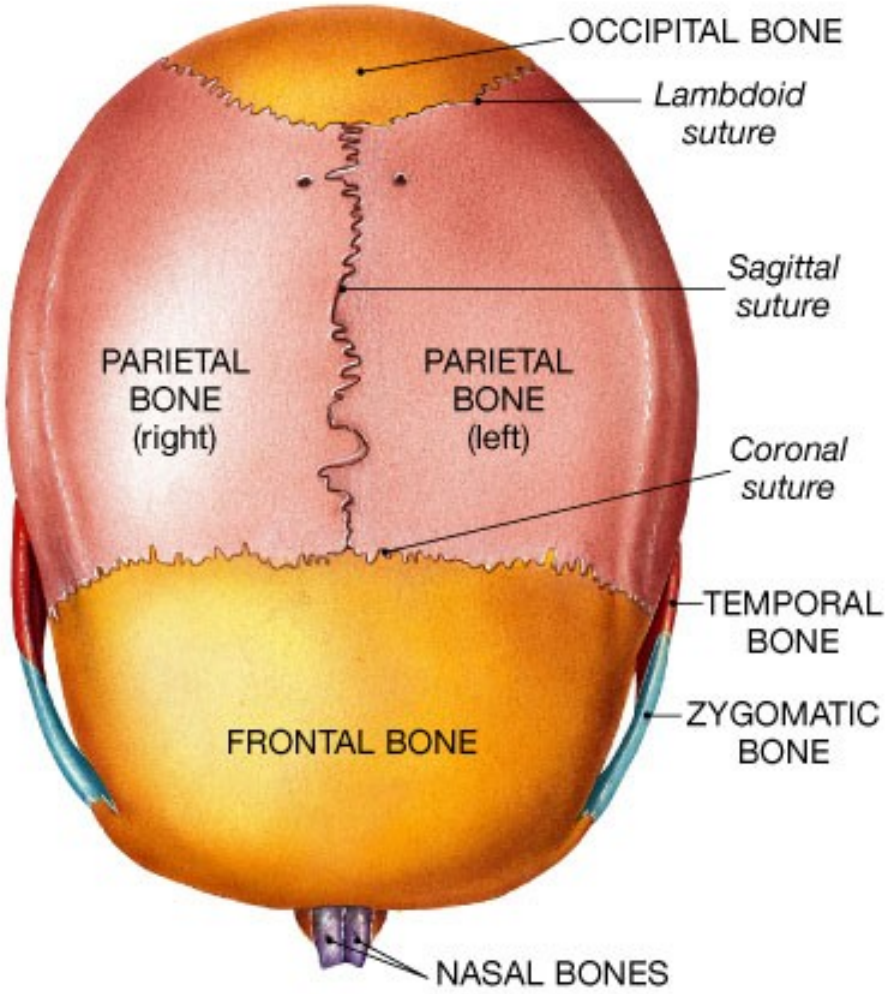


(a) Posterior view



(b) Superior view

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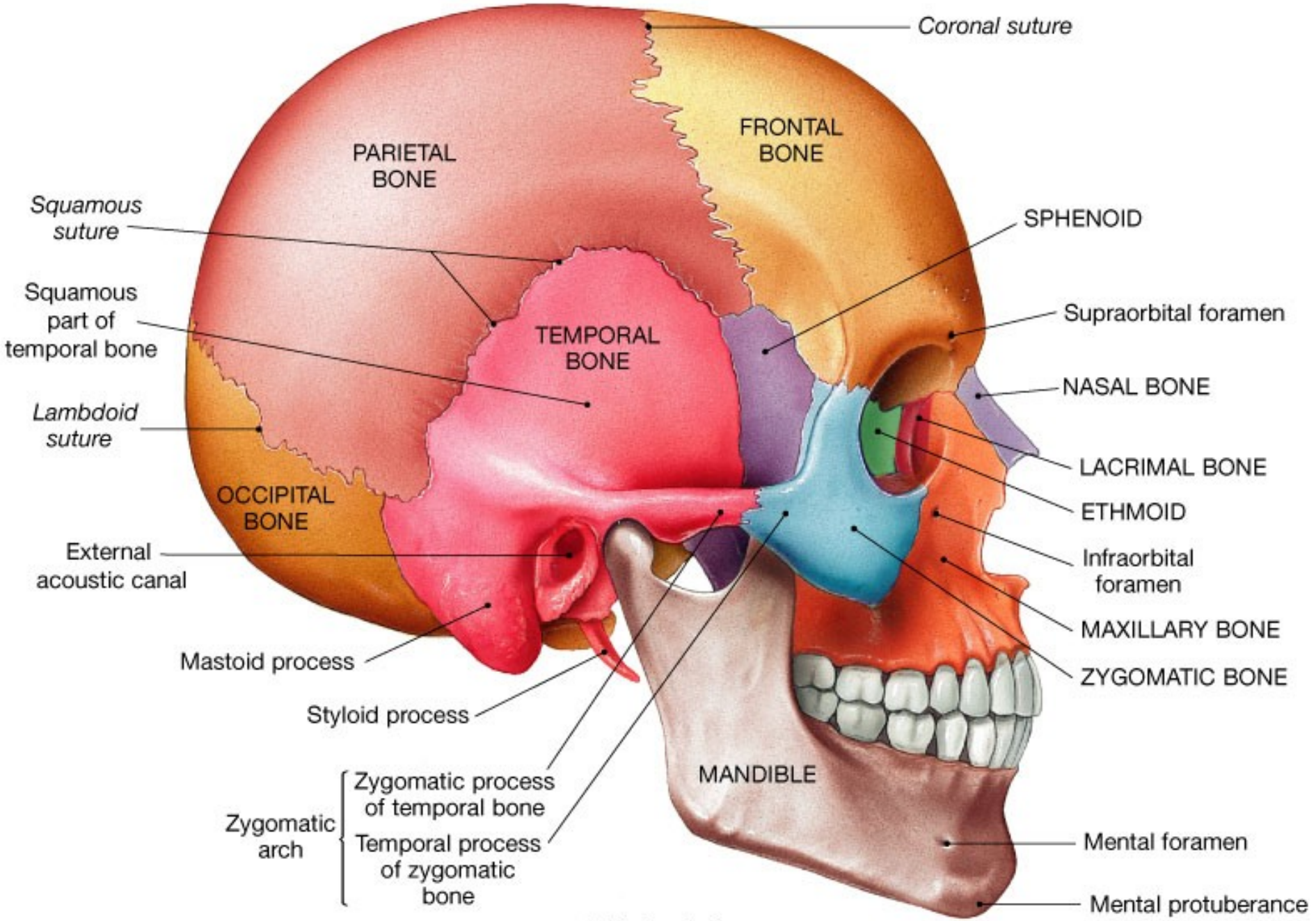

(c) Lateral view

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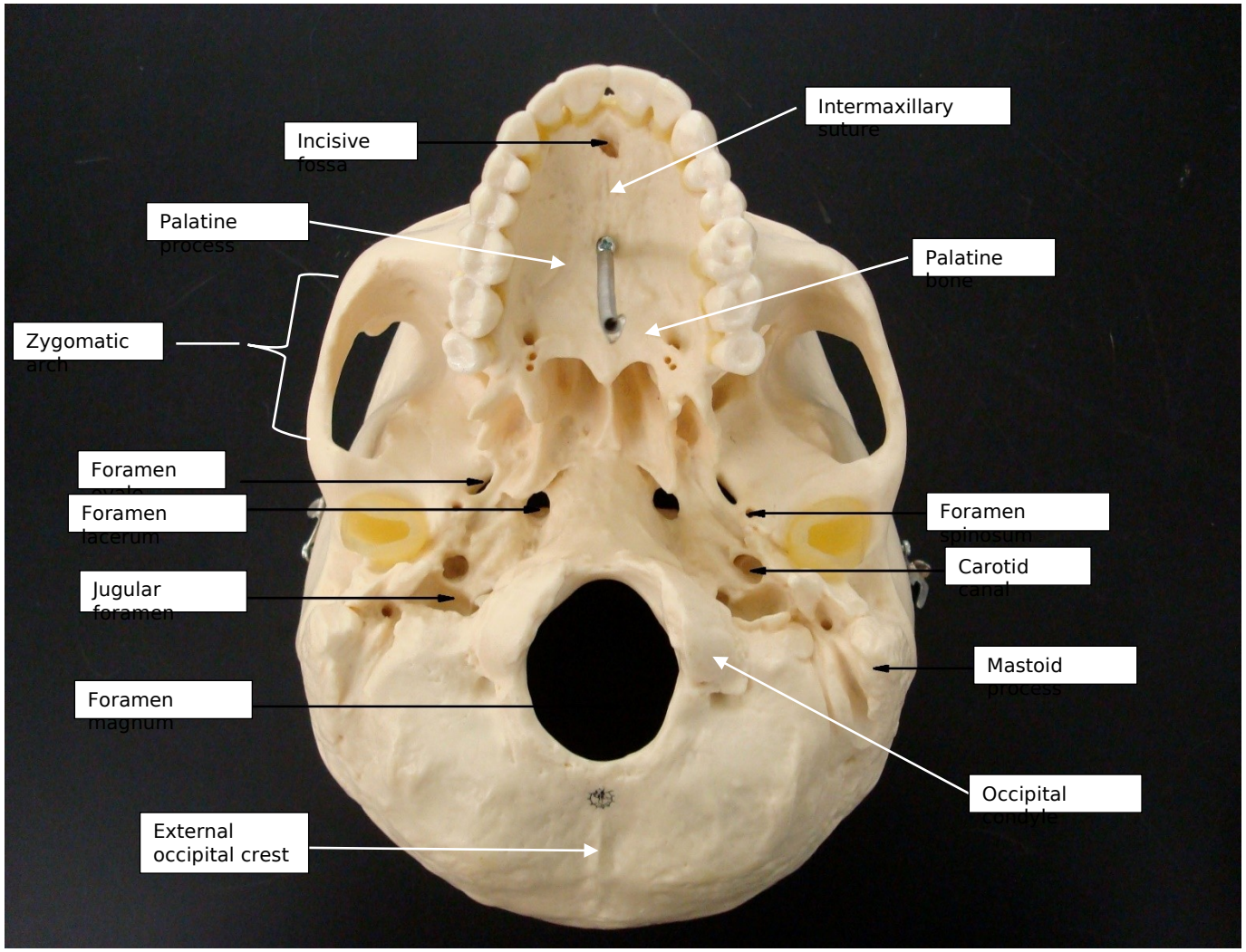
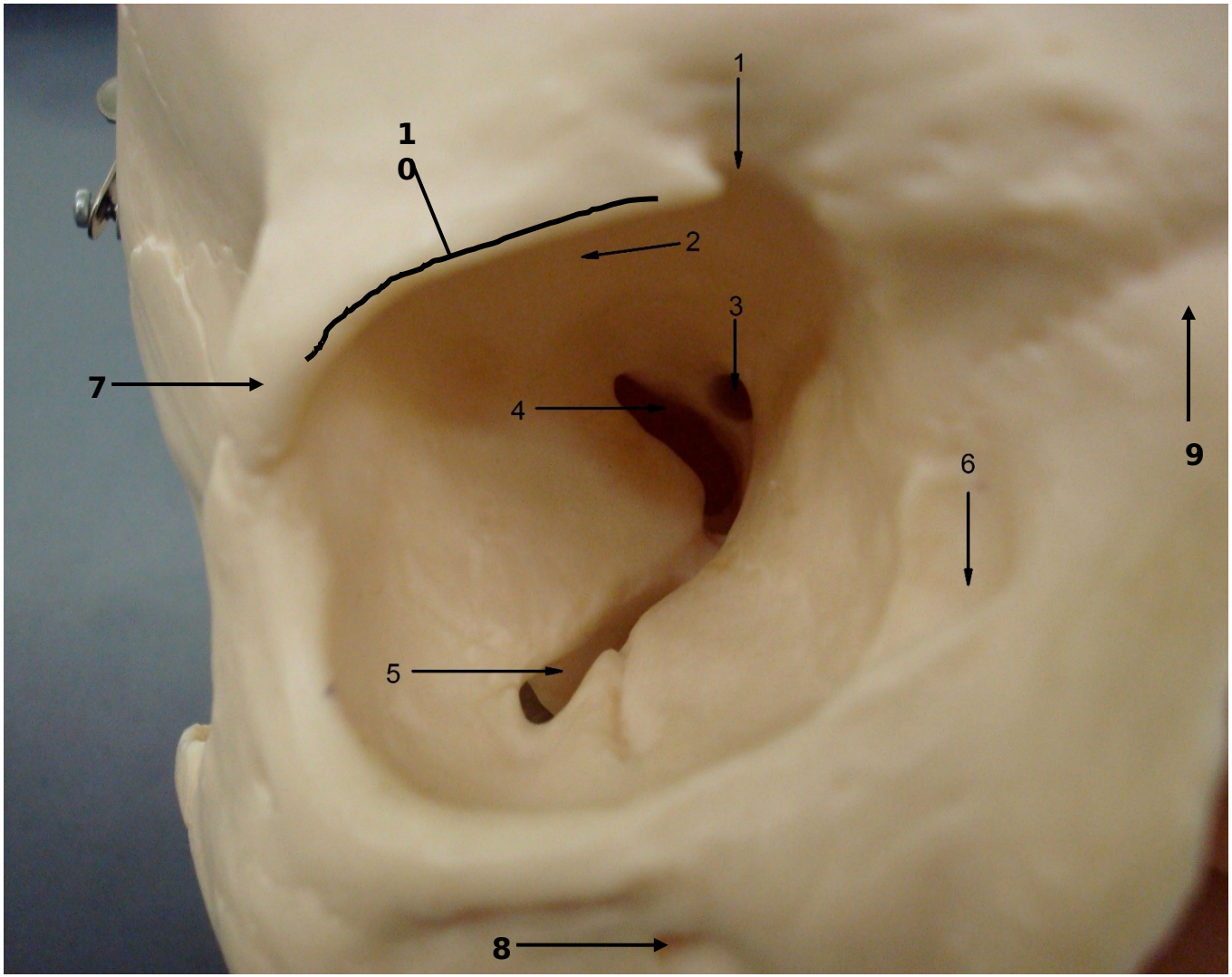
Inferior View of The Skull





Structures:

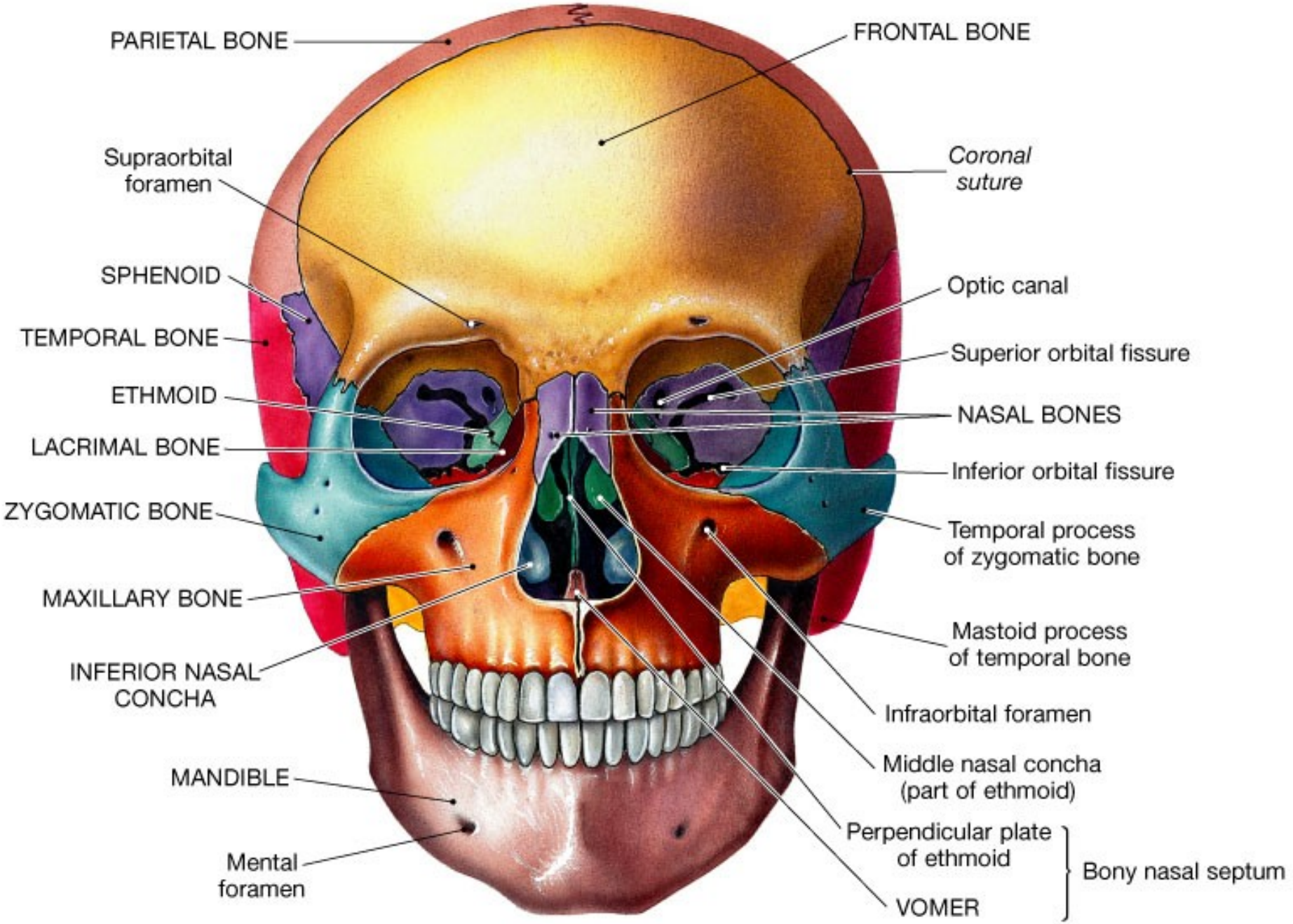
1. supraorbital notch
2. orbital surface*
3. optic canal
4. superior orbital fissure
5. inferior orbital fissure
6. lacrimal canal
7. zygomatic process*
8. infraorbital foramen
9. zygomatic process**
10. supraorbital margin

** of frontal bone*
*** of maxillary bone*

Facial Bones

- Facial bones have no direct contact with the brain or meninges.

2 maxillae bones	2 nasal bones
2 palatine bones	2 inferior nasal conchae
2 zygomatic bones	1 vomer
2 lacrimal bones	1 mandible



(d) Anterior view

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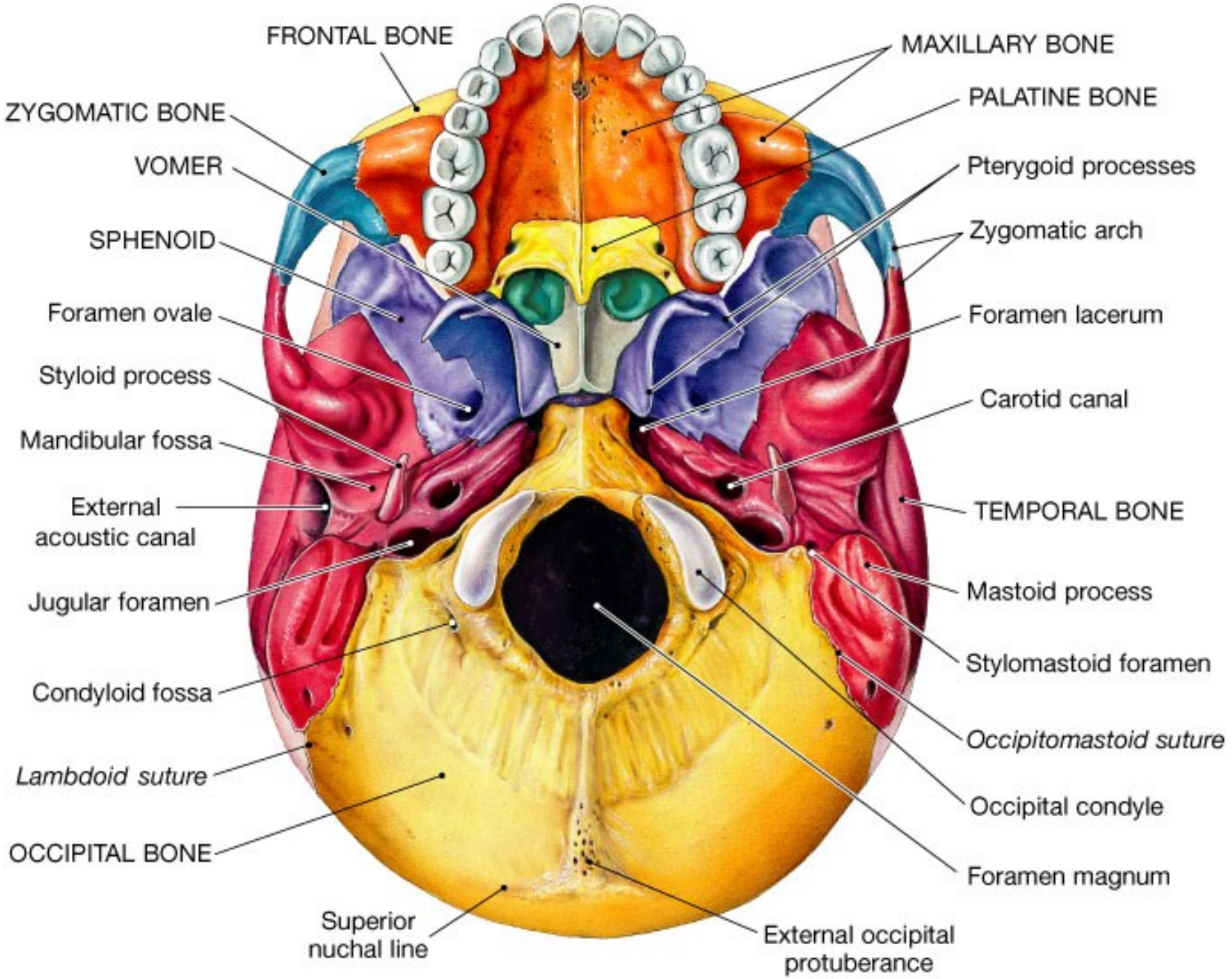

(e) Inferior view

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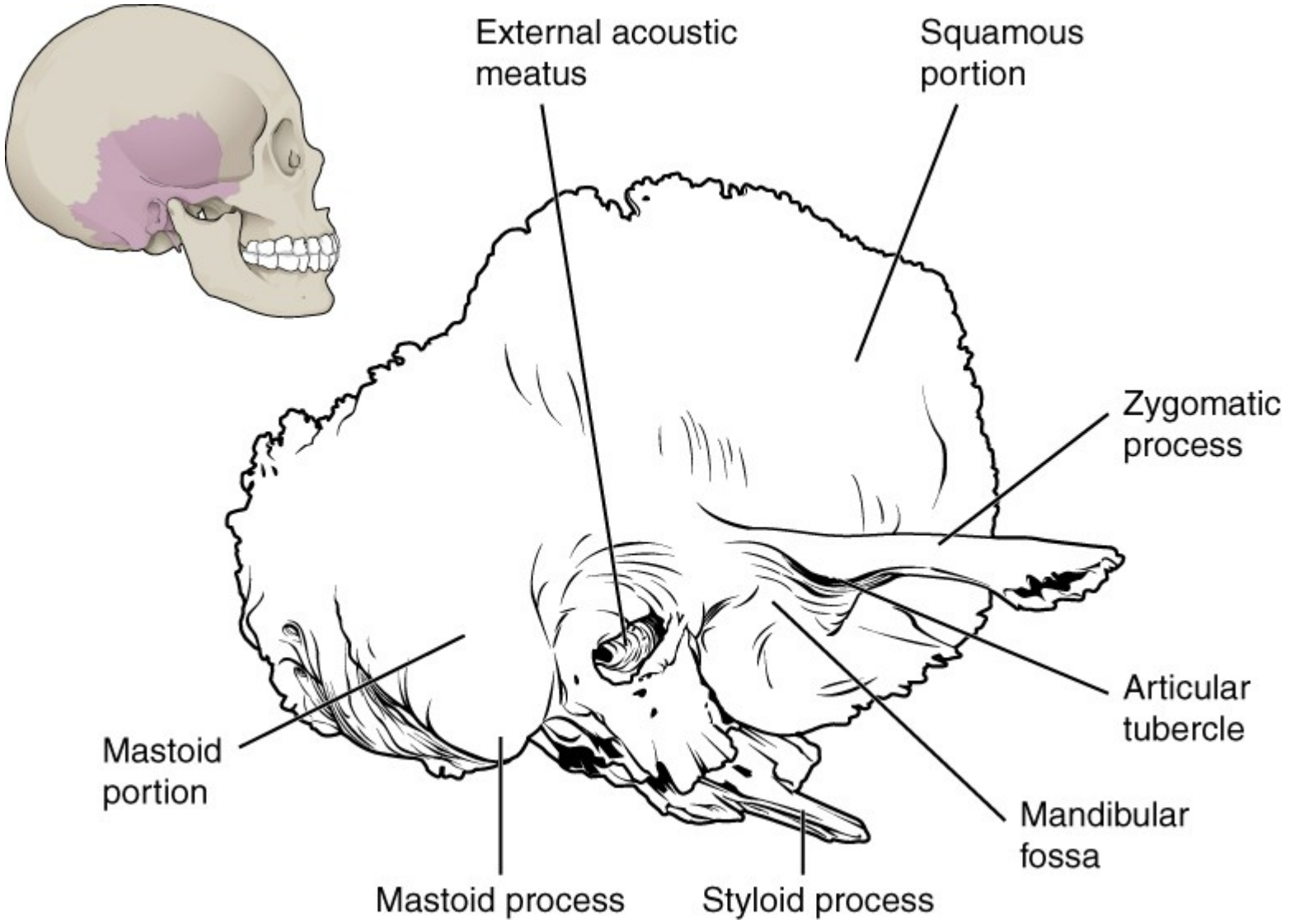
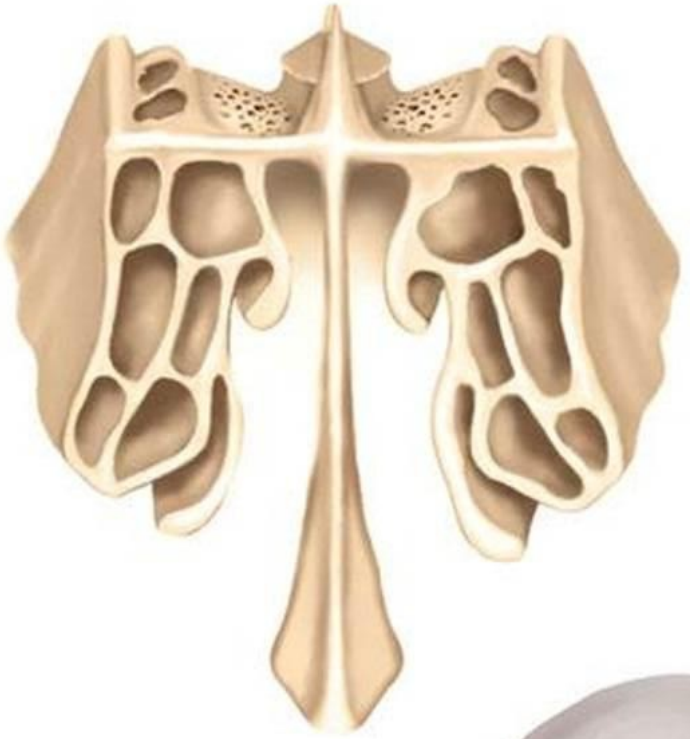
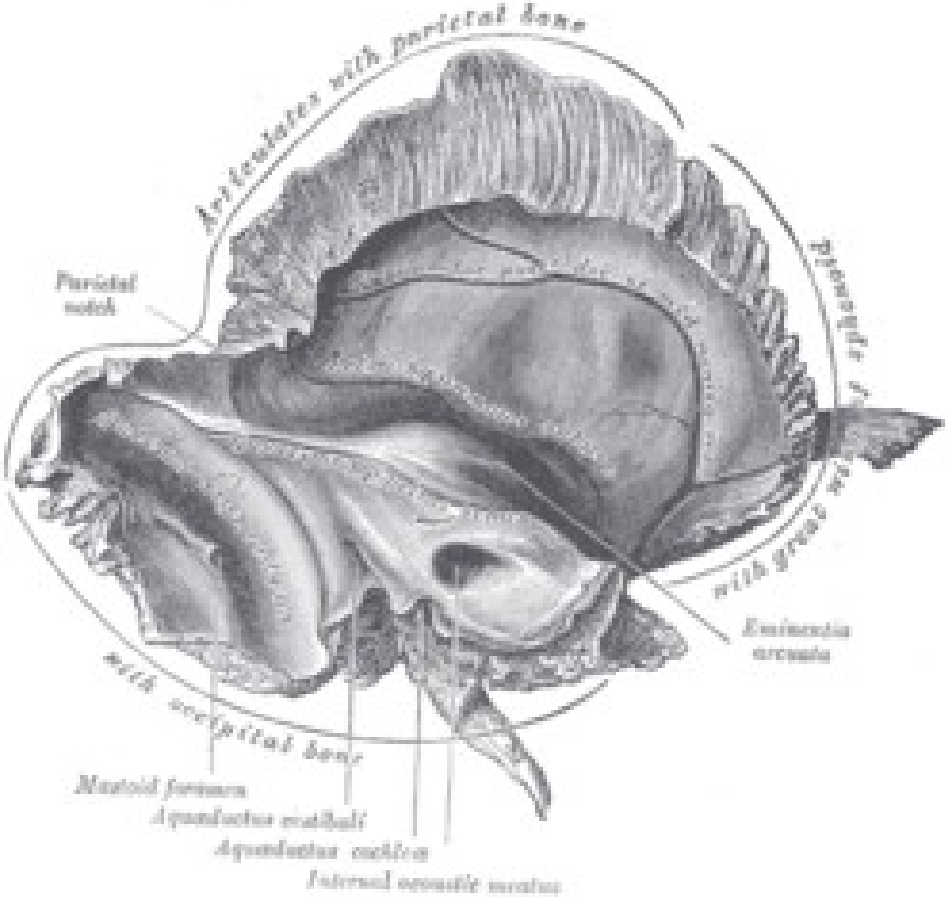


Temporal Bone

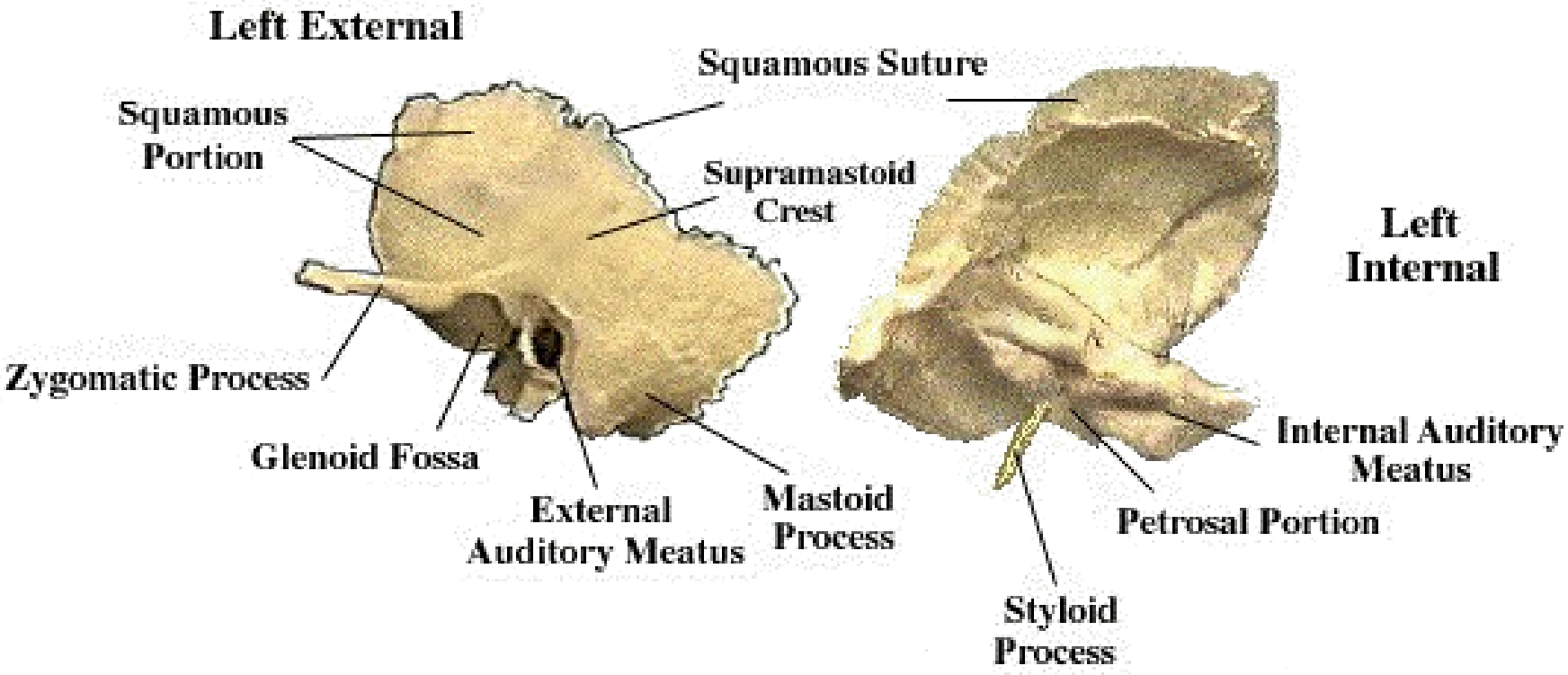
Ethmoid Bone



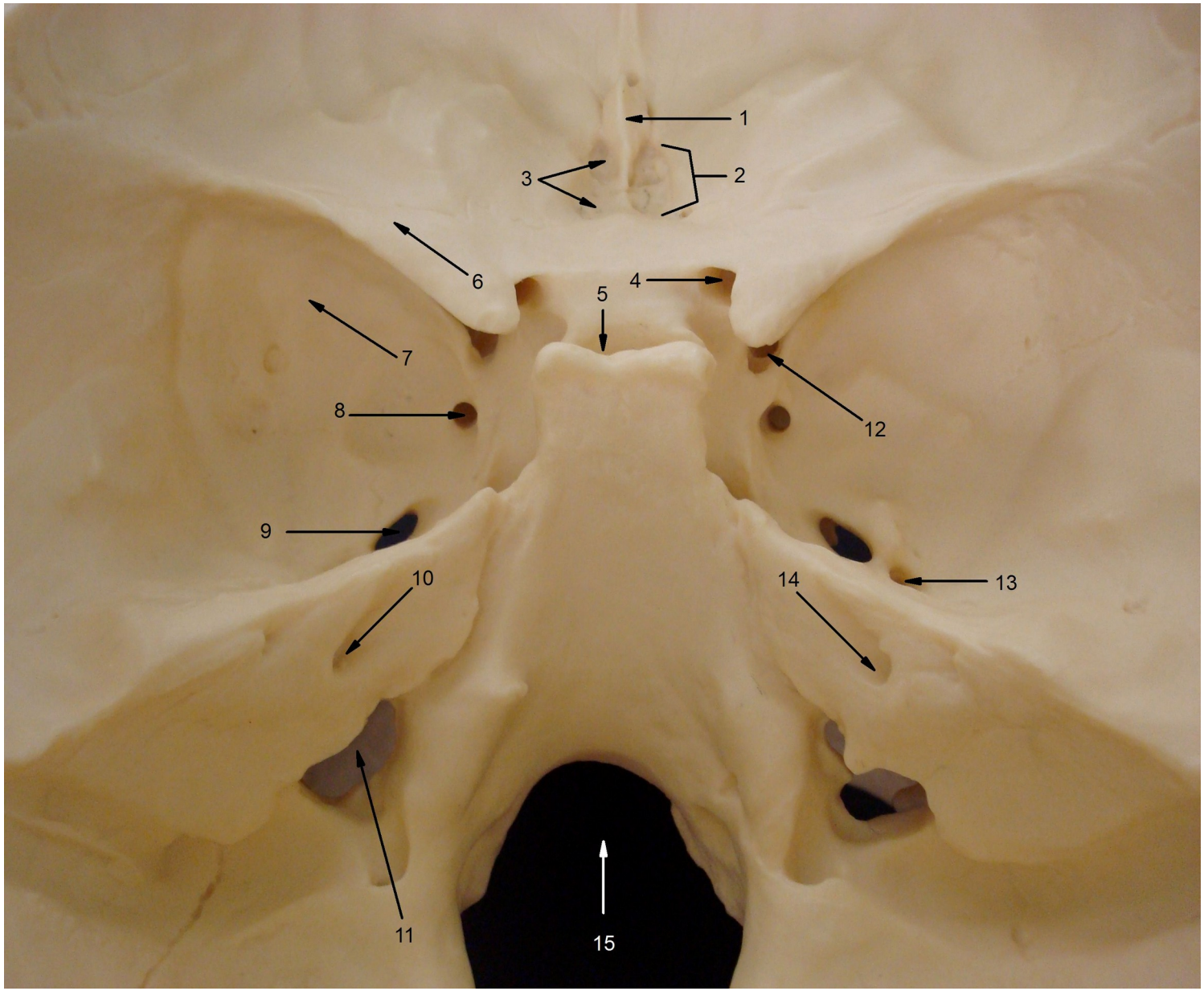
Temporal Bone



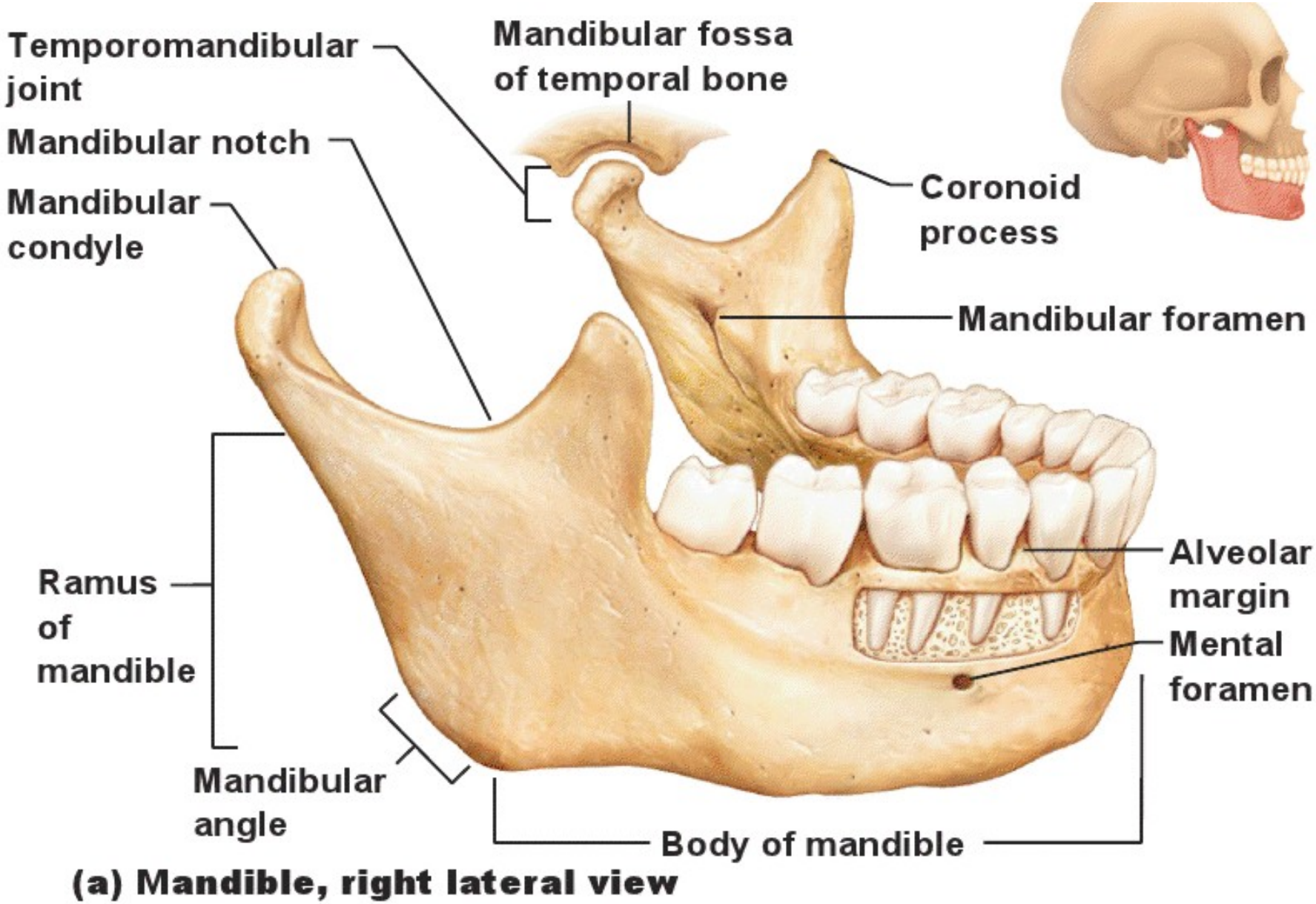
Temporal Bone



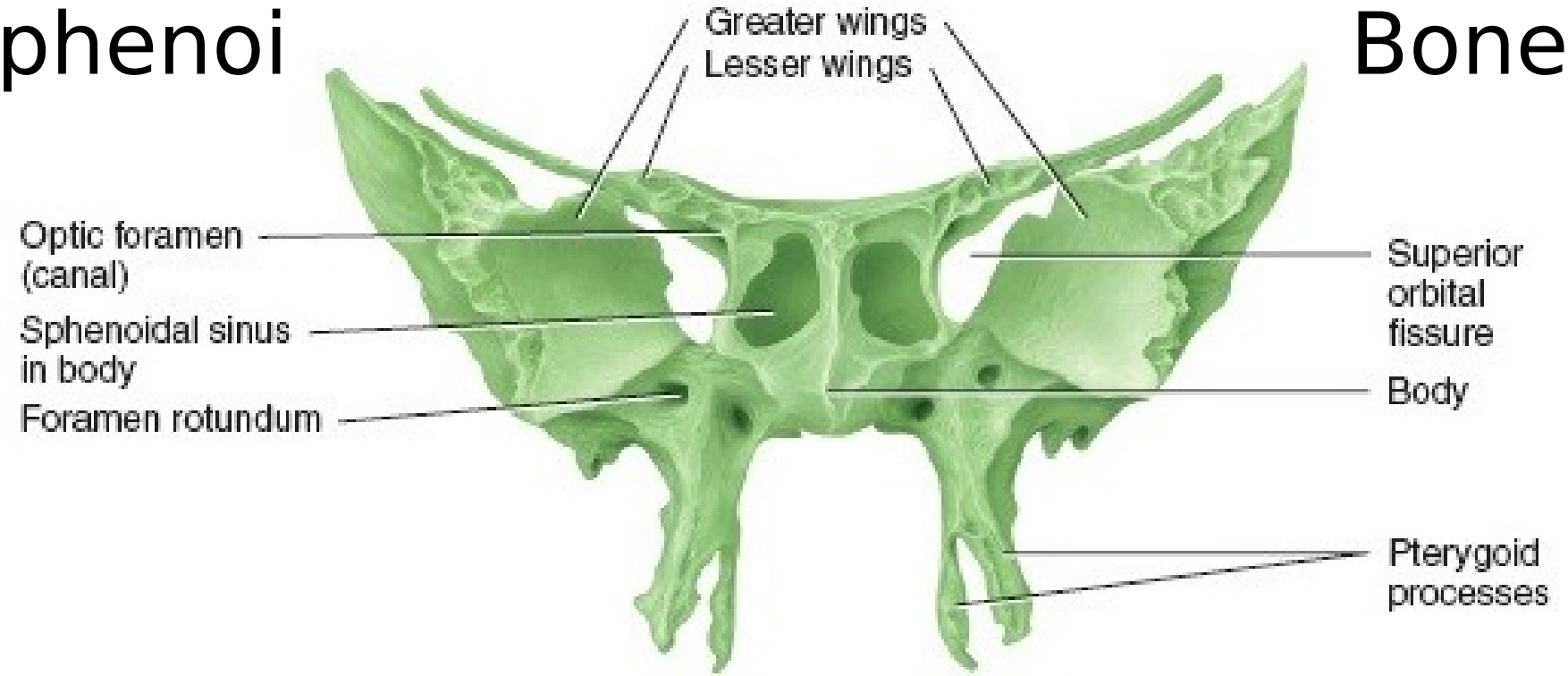
The Holes in the Skull!

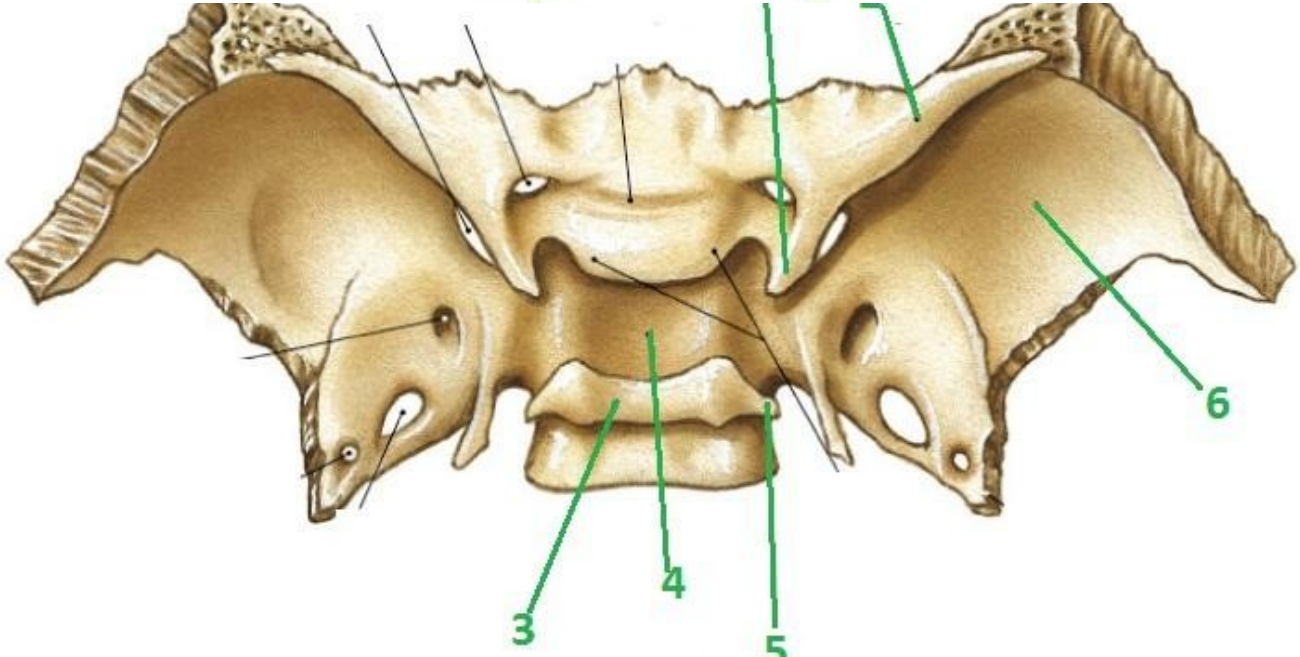


Mandible Bone



Sphenoid Bone





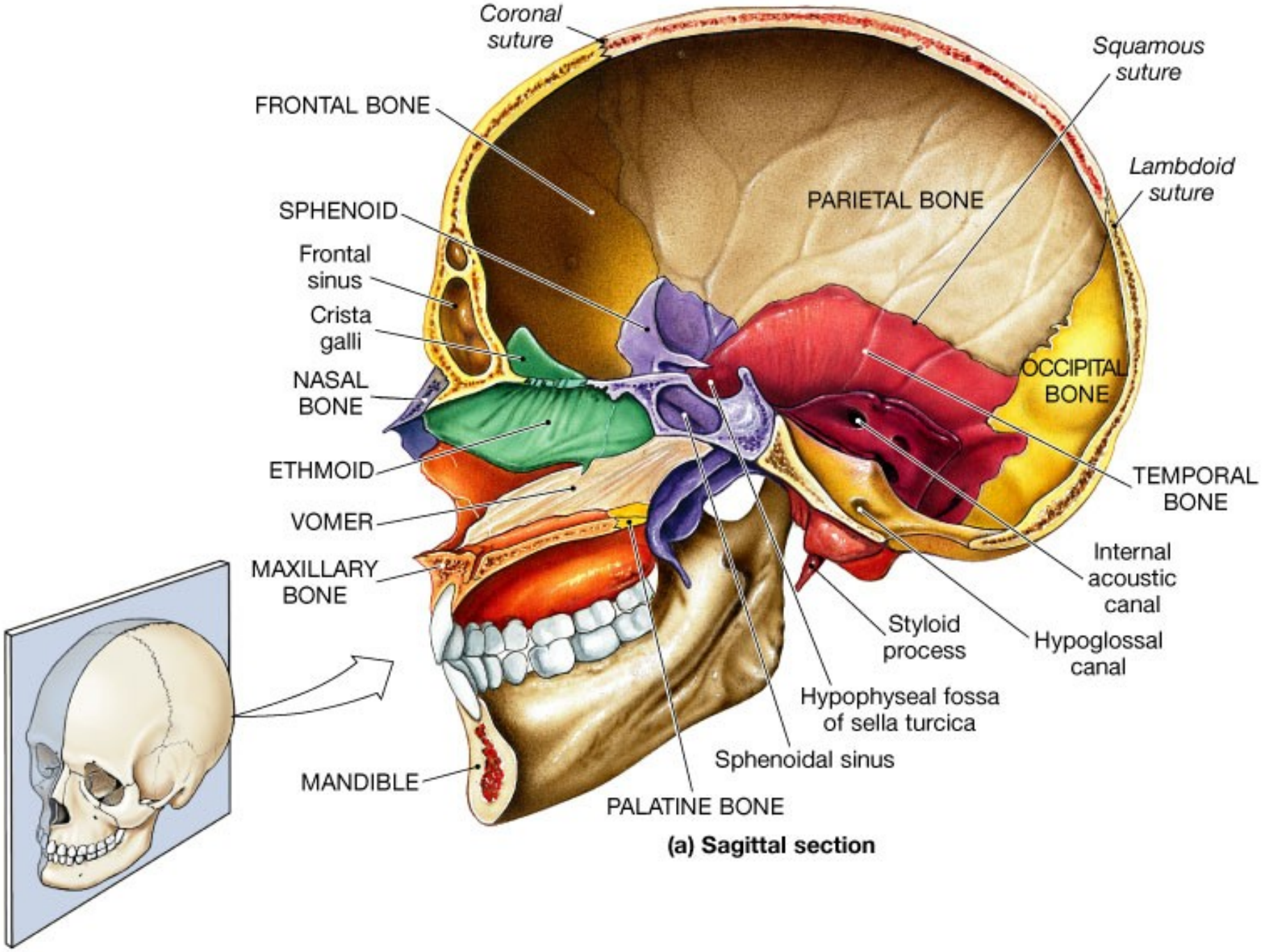
Sinuses in the skeletal system are cavities or chambers in bone.

Roles:

- Lighten weight of skull
- Produce mucus
- Sound resonation

There are 4 **paranasal sinuses**

1. Frontal sinus
2. Maxillary sinus
3. Sphenoidal sinus
4. Ethmoidal sinus (air cells)



(a) Sagittal section

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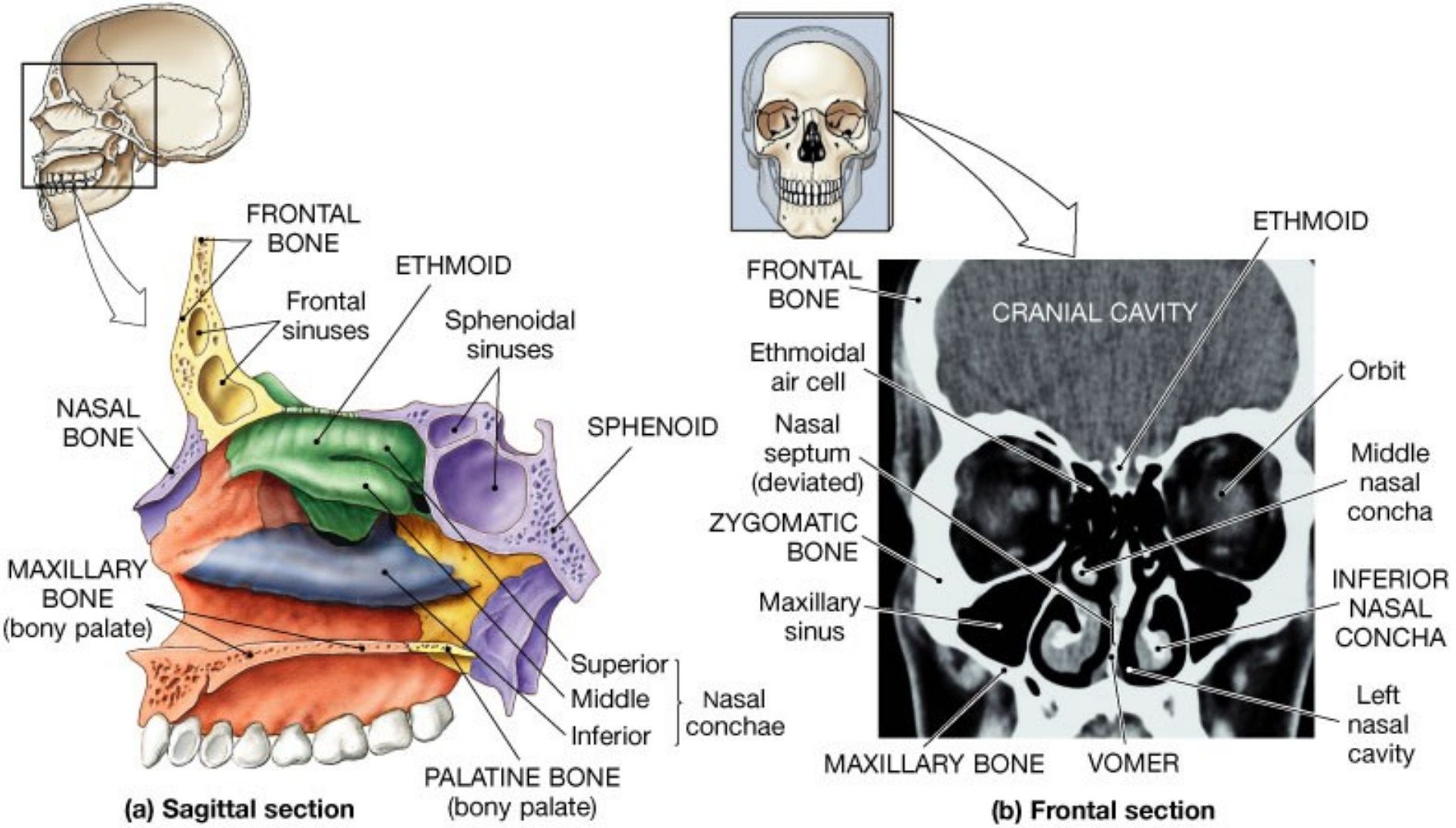

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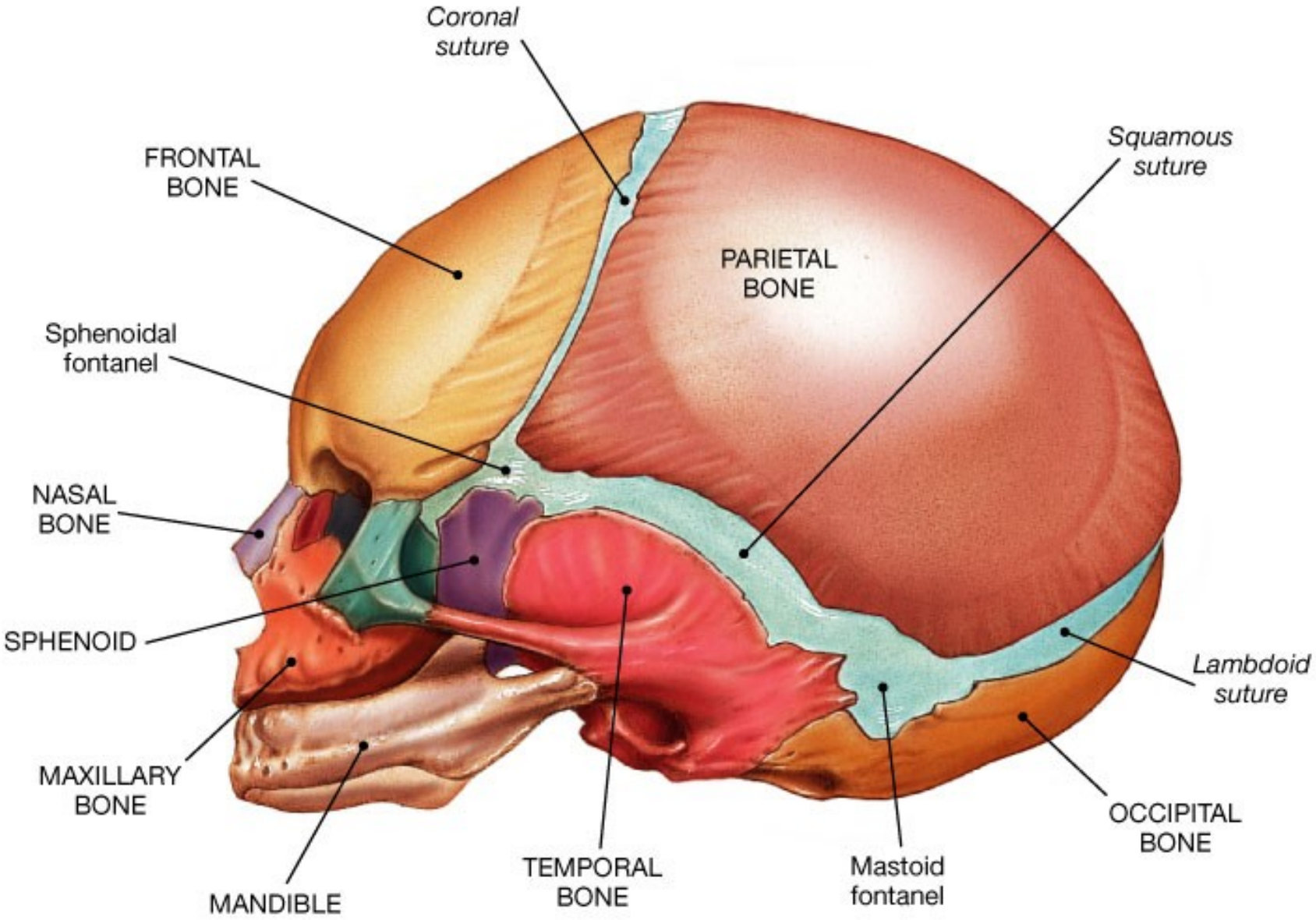
Fontanels are the fibrous regions between the cranial bones of a developing skull.

- Provide flexibility for growing brain.

- Allows distortion of skull during birth.

- Most fontanels are fully fused by 12 months.

- Anterior fontanel does not close for 18 to 20 months of age = “soft spot” on baby head!



(a) Lateral view

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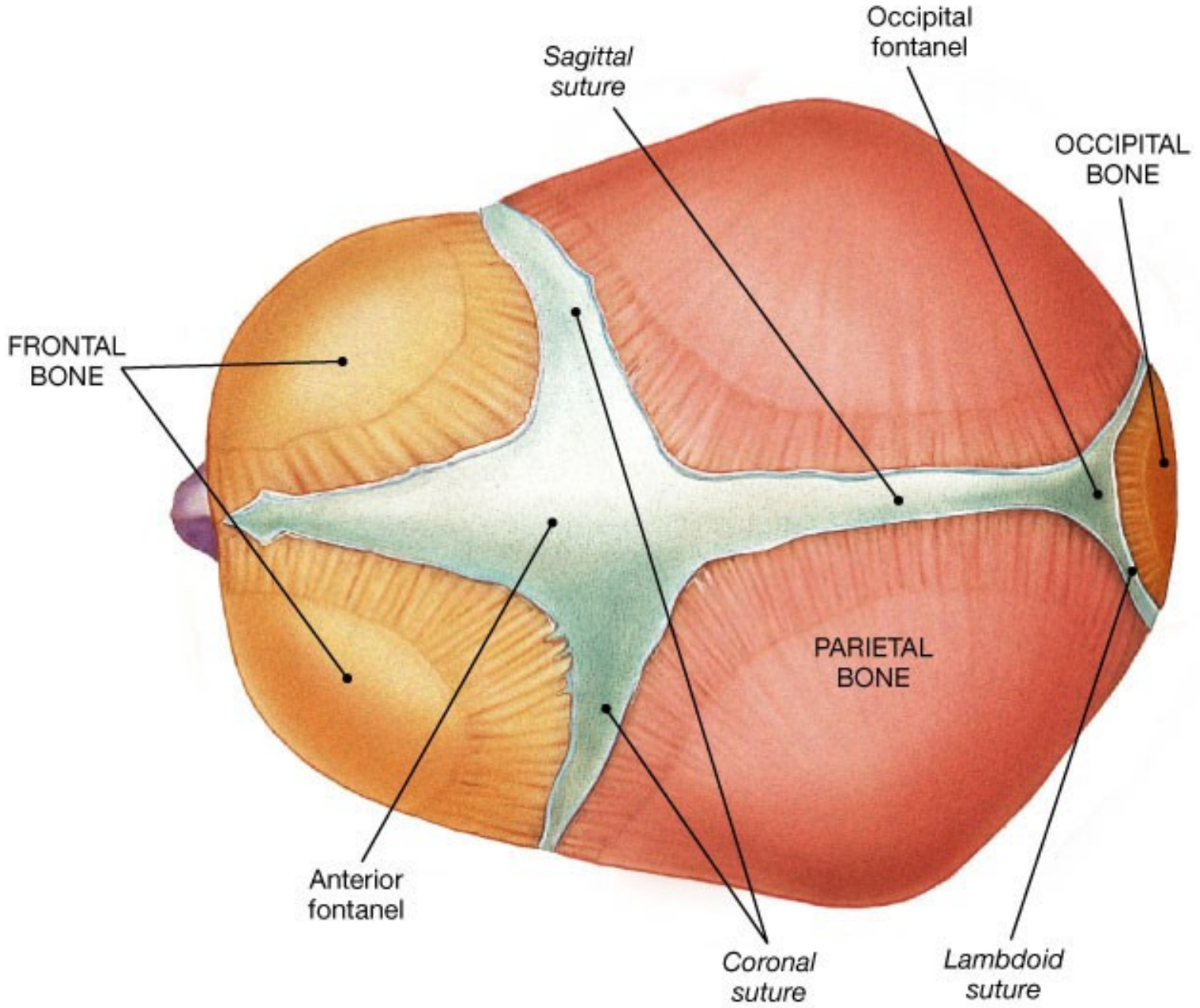

(b) Superior view

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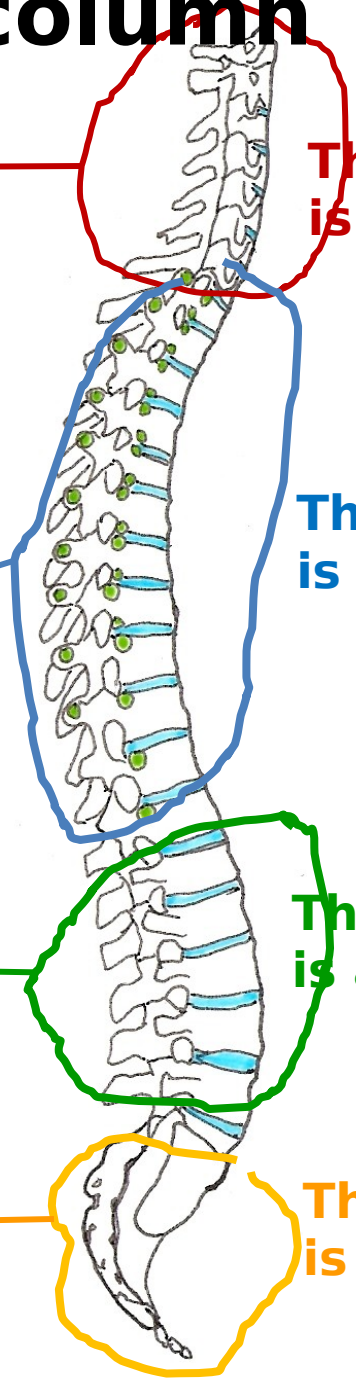
nes of the vertebral column

Curvatures:



Cervical, the top 7

The Cervical Curvature
is a secondary curvatur

racic, attach to ribs, there
12, cause there are 12
rs of ribs!

The Thoracic Curvature
is a primary curvature

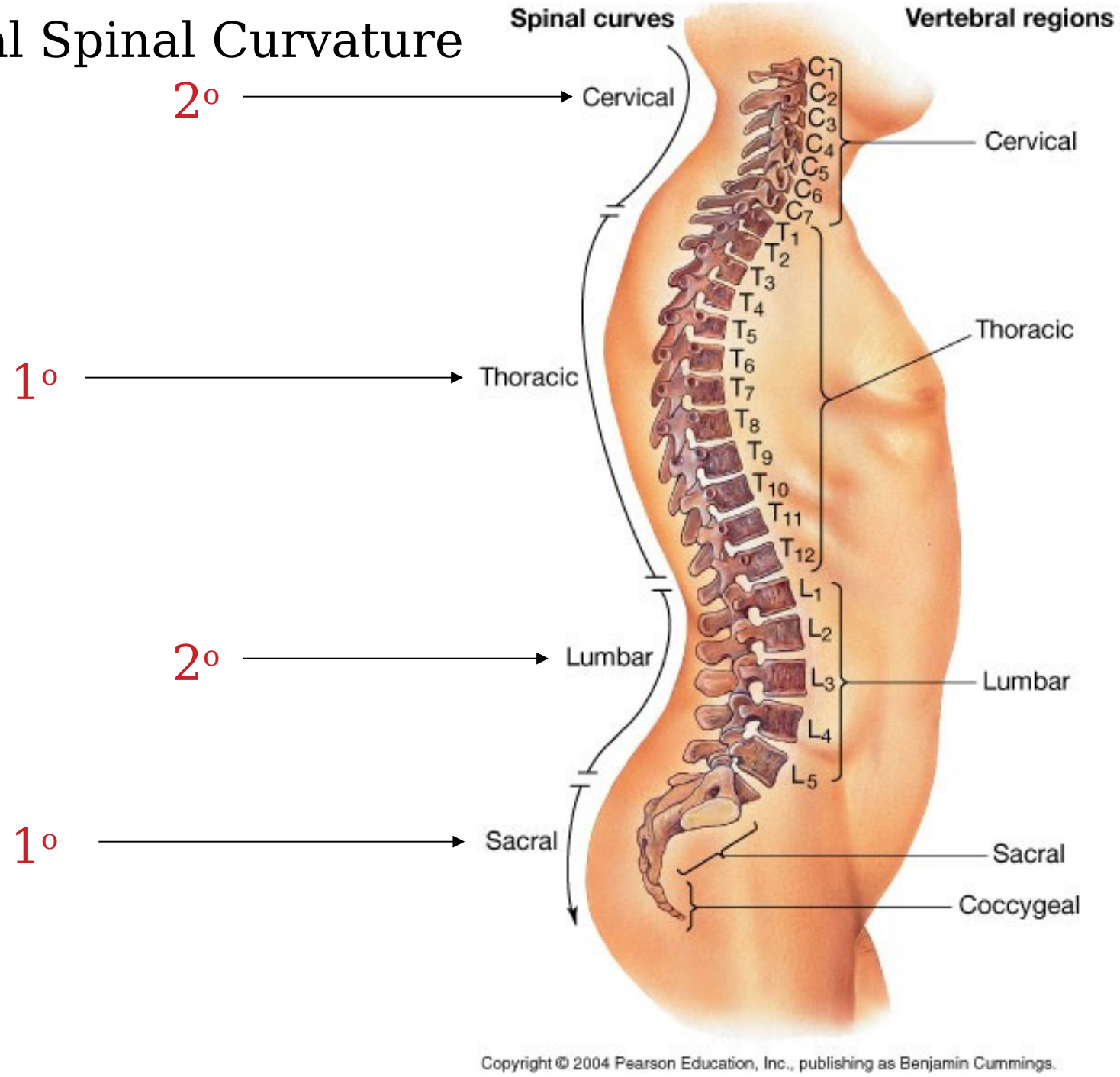
mbar, big bottom ones!

The Lumbar Curvature
is a secondary curvature

acral and coccyx ,
ese babies are all fused!

The Sacral Curvature
is a primary curvature

Normal Spinal Curvature



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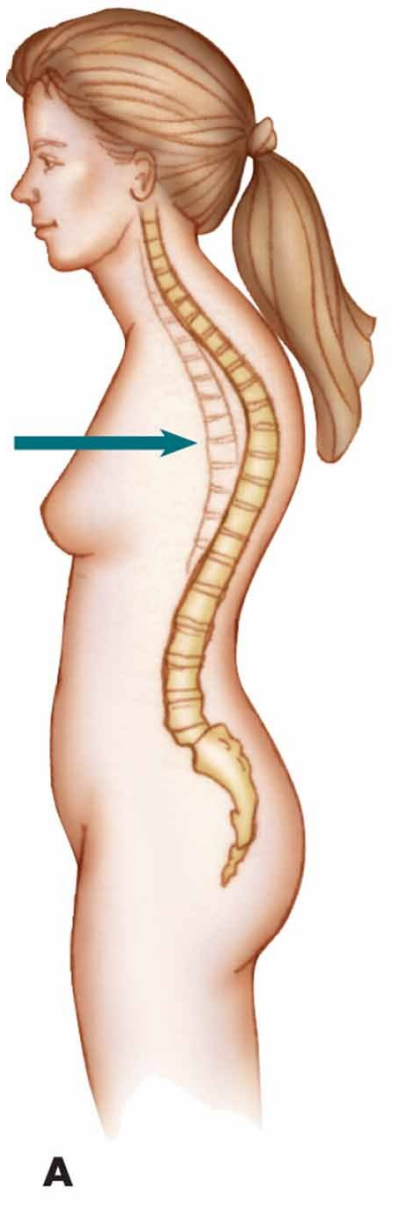
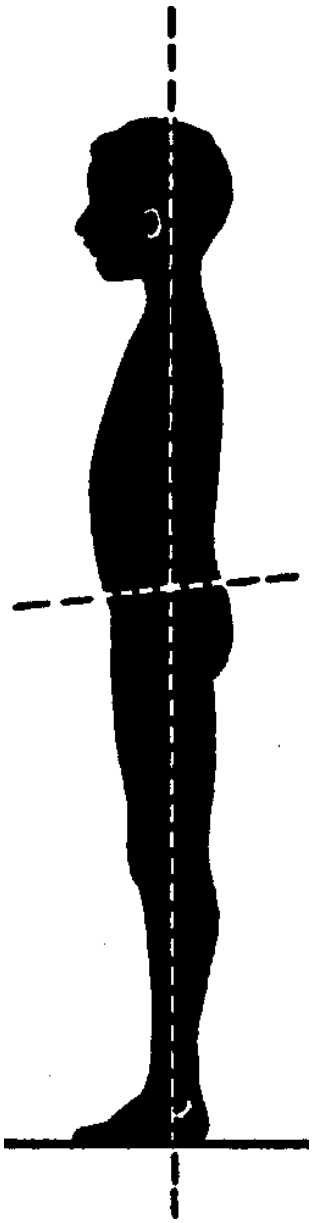
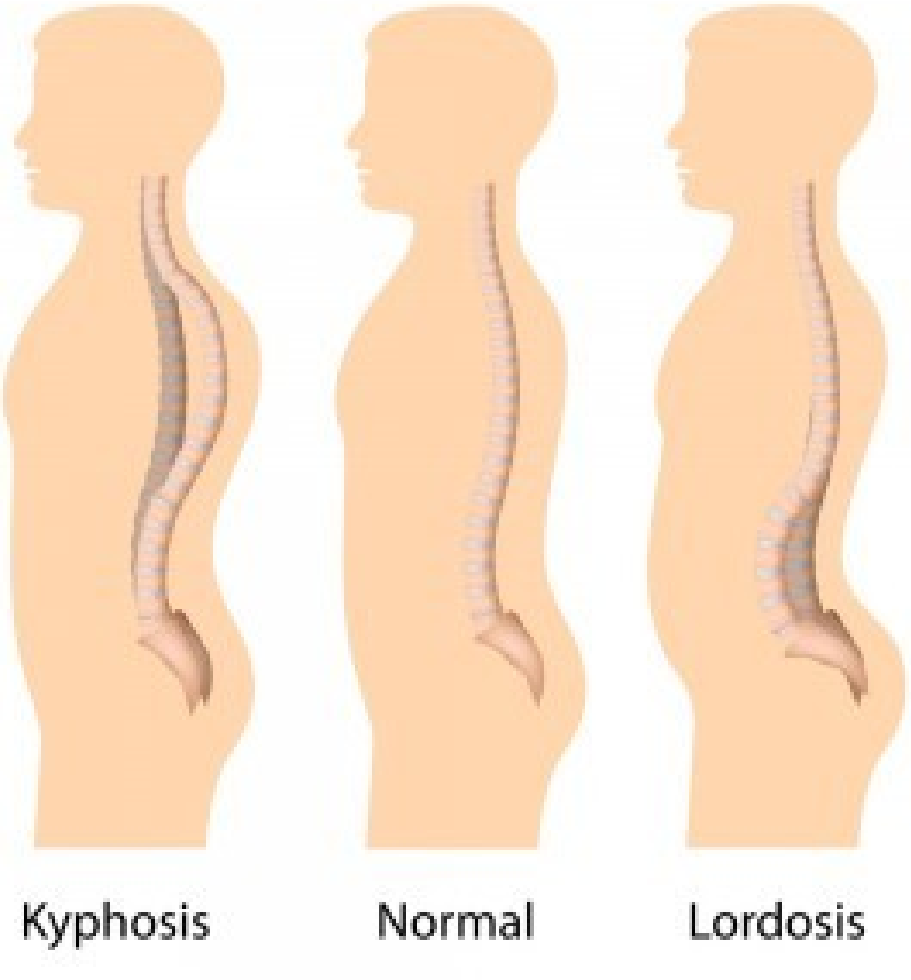
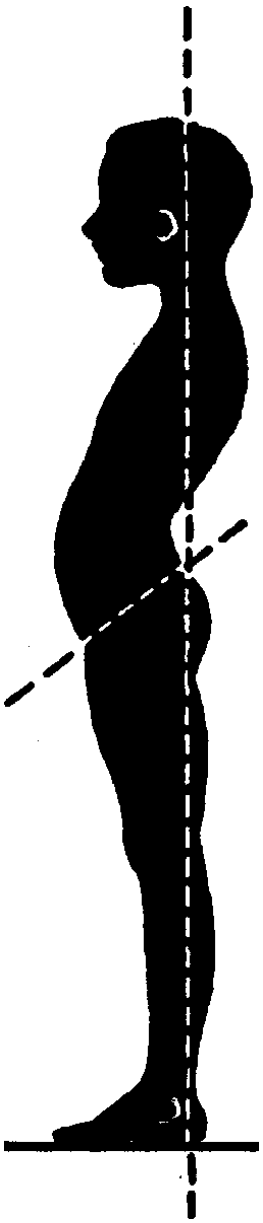
Abnormal Curvatures of the Spinal Column






Kyphosis
Normal
Lordosis



Vertebrae – The bones of the vertebral column

There are a total of 33 total bones in the 4 regions:

24 separate vertebrae

+ sacrum (5 fused vertebrae)

+ coccyx (4 fused vertebrae)

rvical vertebrae = 7 bones, (C_1, C_2, C_3 etc.)

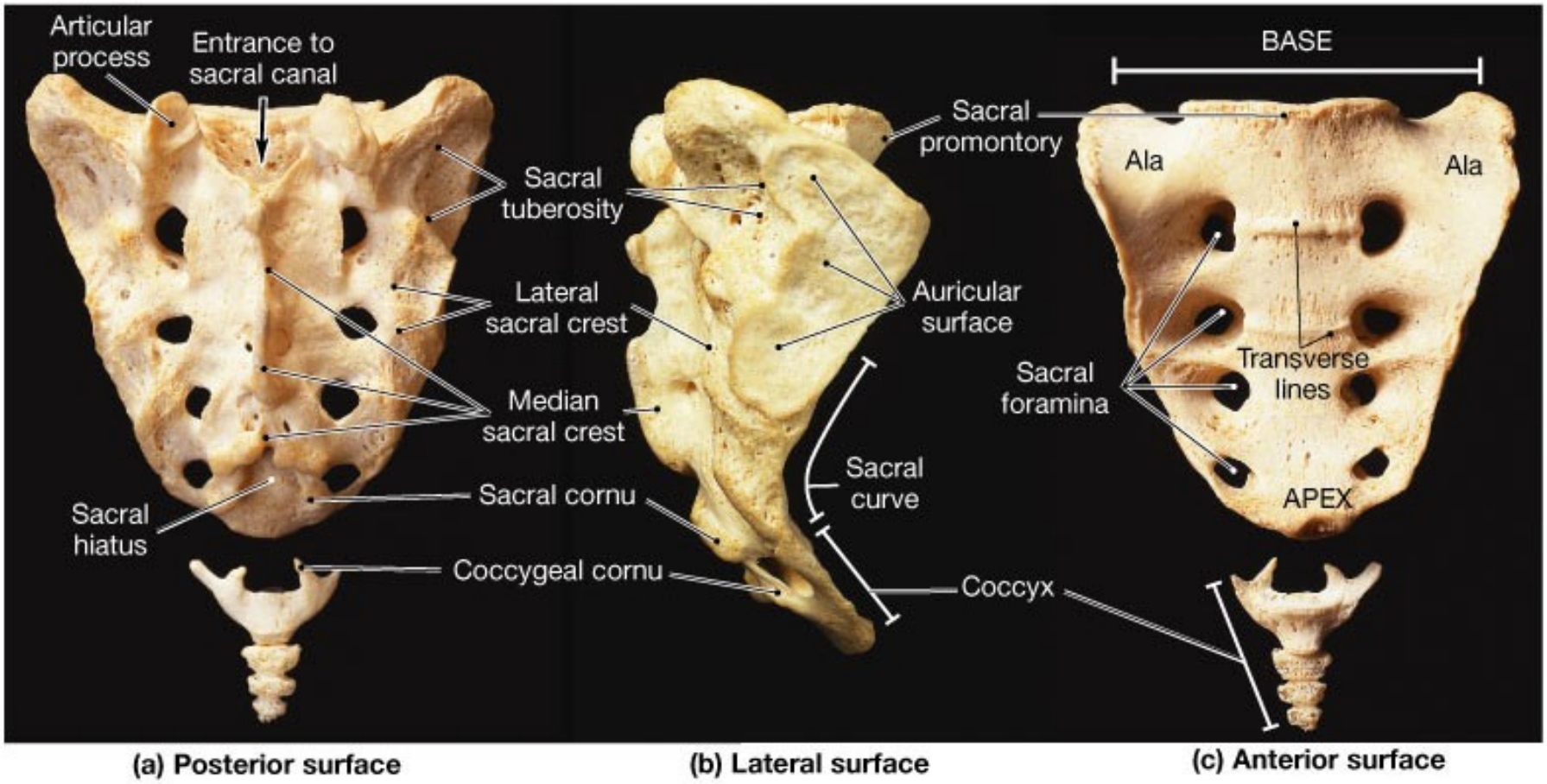
Thoracic vertebrae = 12 bones, (T_1, T_2, etc.)

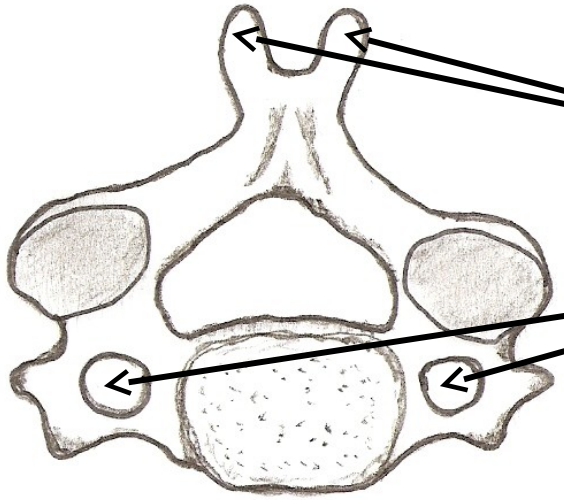
Lumbar vertebrae = 5 bones, (L_1, L_2, etc.)

Total = 24 individual bones

Sacral vertebrae – 5 fused bones, (S_1, S_2, etc.)

Coccygeal vertebrae – 4 fused bones, (Co_1, Co_2, etc.)





1. Unique Features of Cervical Vertel

Bifid spinous process

Transverse foramen

These ones are instantly recognizable due to the 'holes' in the transverse processes!

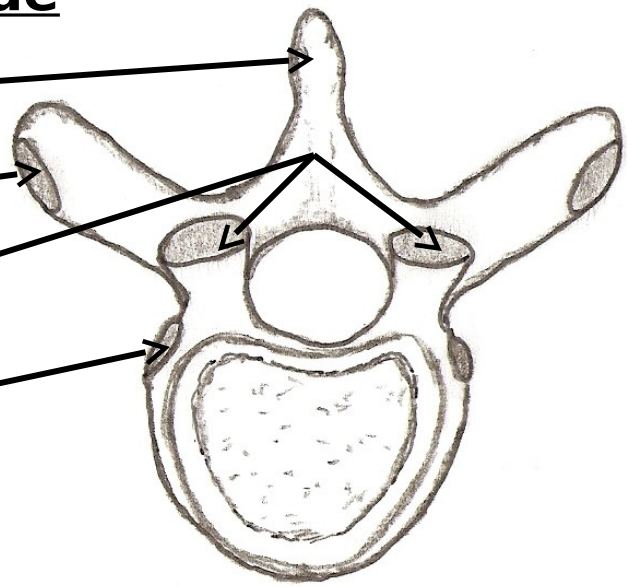
Unique Features of Thoracic Vertebrae

rp, downward angle of spine

al facets on transverse process

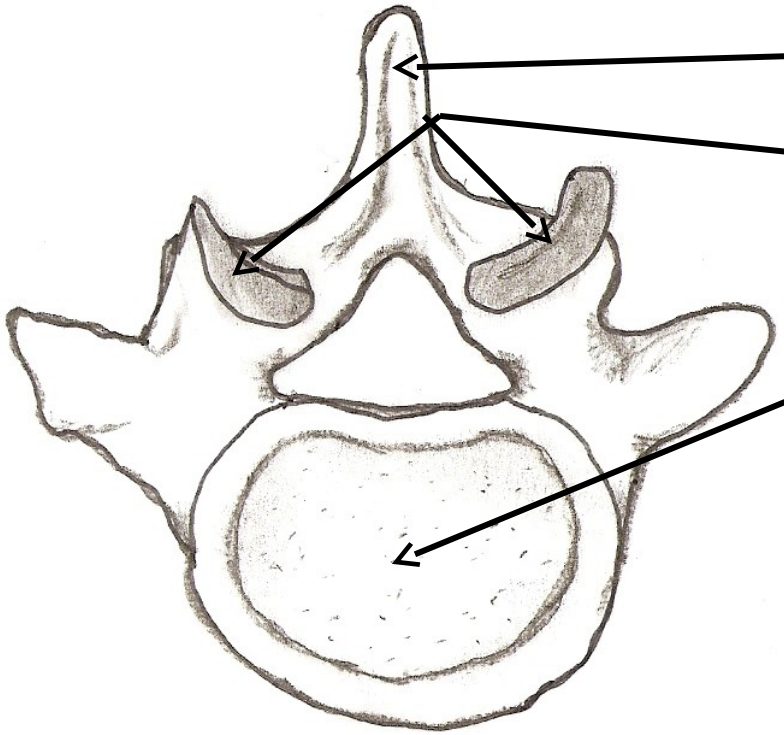
erior articulating processes are like hands up' in orientation

al facets on body



Only ones with attachments for ribs!

3. Unique Features of Lumbar Vert



Short, blunt spine

Superior articulating processes are like ‘two hands clapping’ in orientation!

Large body

ervical Vertebrae - 7 bones, (C_1, C_2, C_3 etc.

C_1 - called the Atlas.

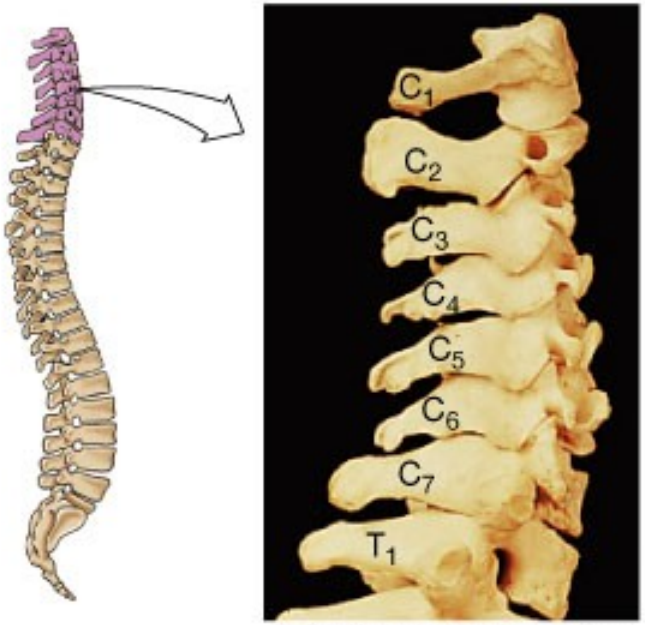
- Articulates with occipital condyles.

- Has a ‘ring’ like structure (no body).

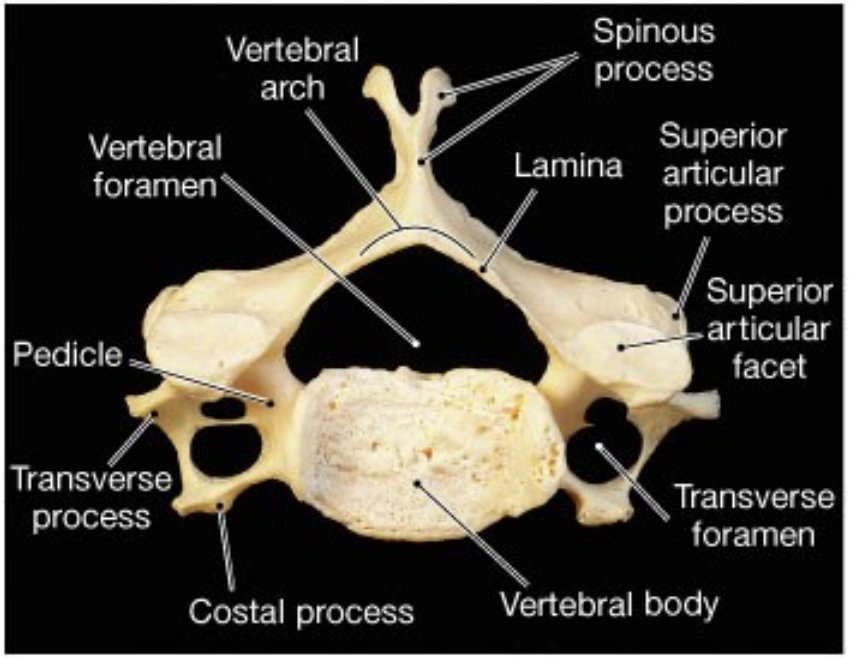
C_2 - called the Axis.

- Articulates with the atlas.

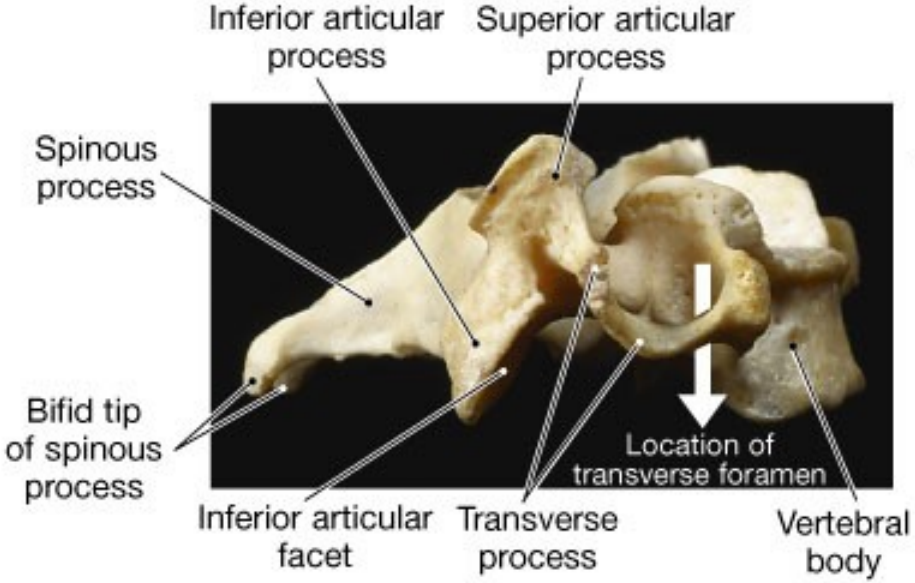
- Has odontoid process (dens).



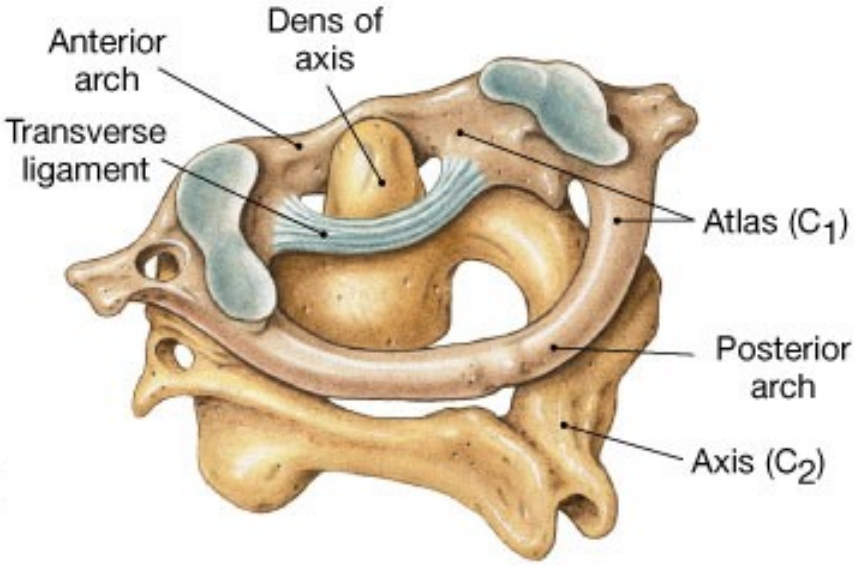
(a) Cervical vertebrae



(b) Typical cervical vertebra (superior view)



(c) Typical cervical vertebra (lateral view)



(d) The atlas–axis complex

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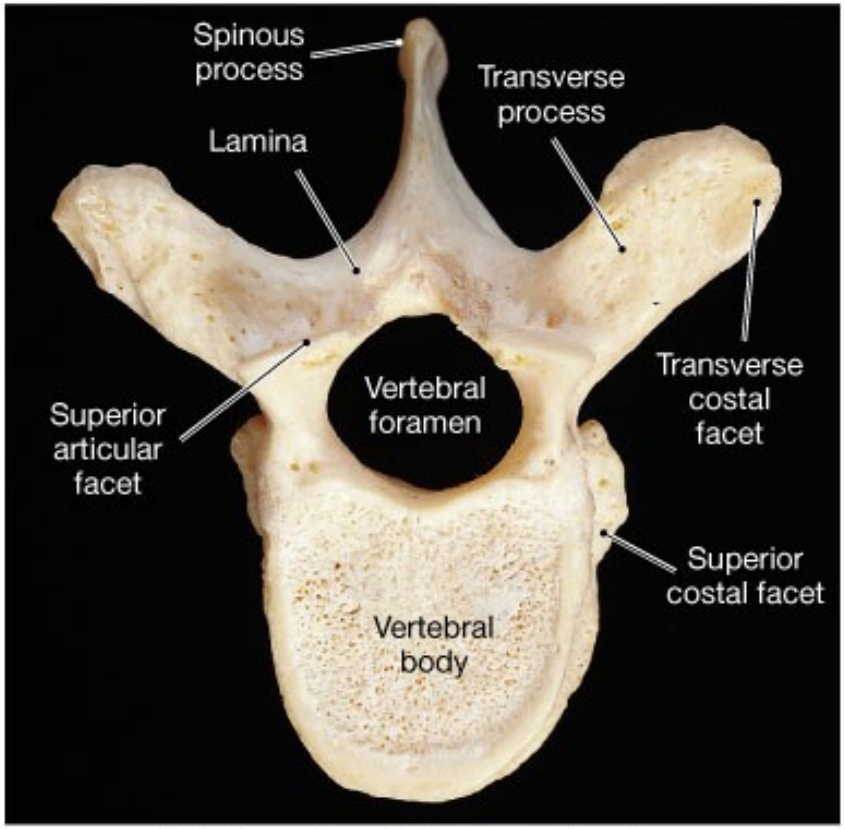
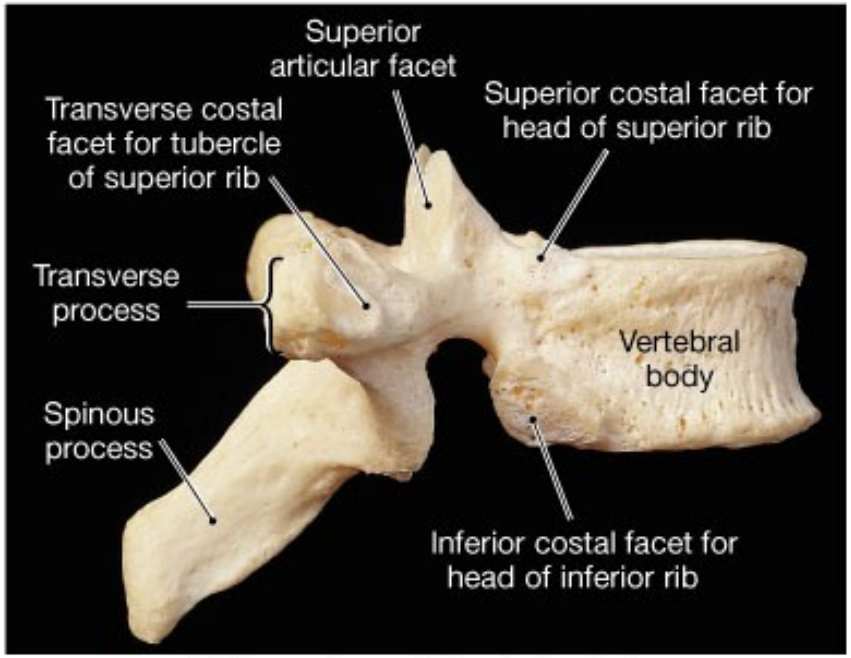
Thoracic vertebrae – 12 bones, (T_1, T_2, etc.

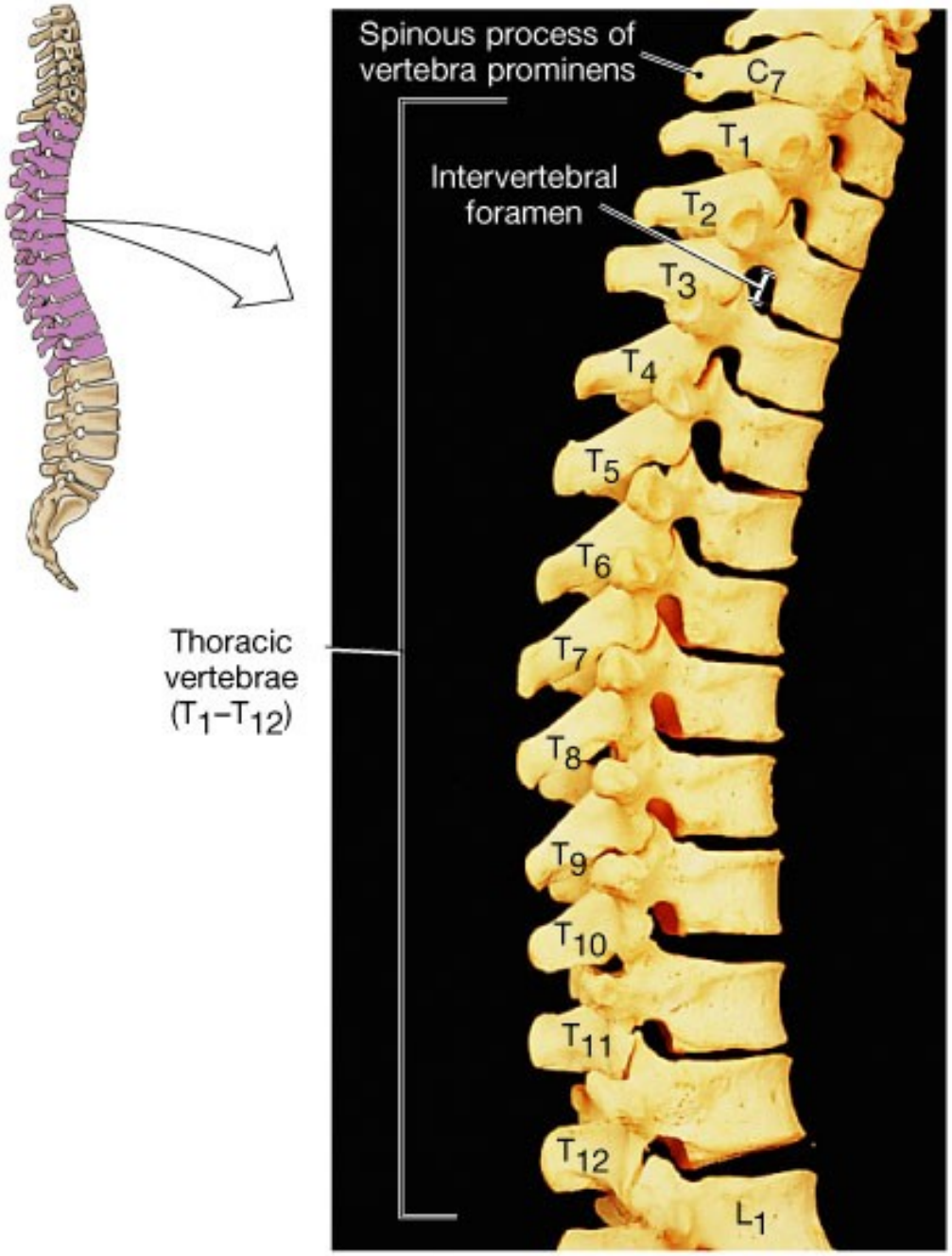
- Have costal facets for attachment of ribs.



(b) Thoracic vertebra, superior view


Superior articular facet
Transverse costal facet for tubercle of superior rib
Superior costal facet for head of superior rib
Transverse process
Vertebral body
Spinous process
Inferior costal facet for head of inferior rib

(c) Thoracic vertebra, lateral view



(a) Thoracic vertebrae, lateral view

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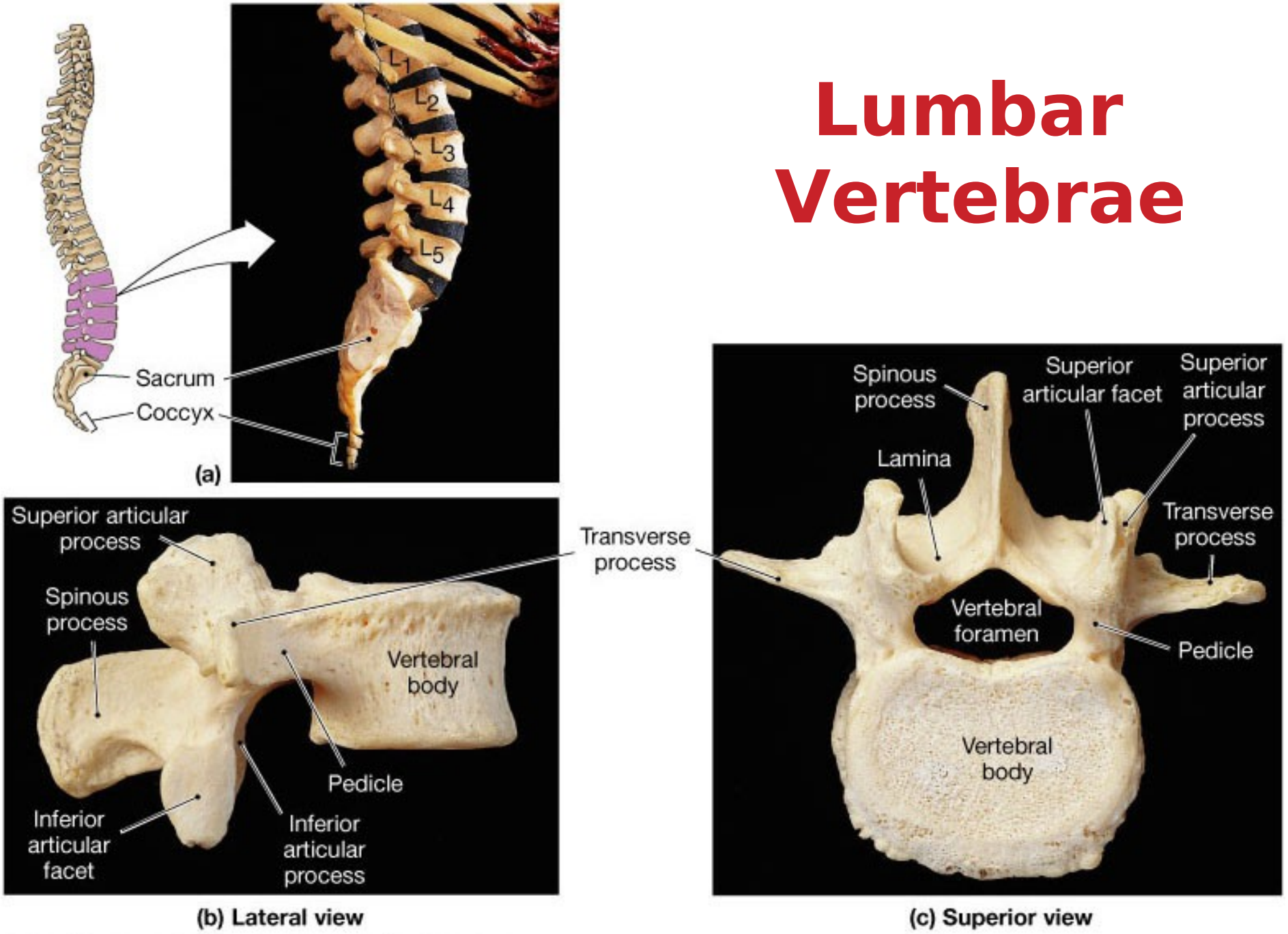
Thoracic Vertebrae – 12 bones, (T_1, T_2, etc

Lumbar Vertebrae – 5 bones, (L_1, L_2, etc.)

Lumbar Vertebrae



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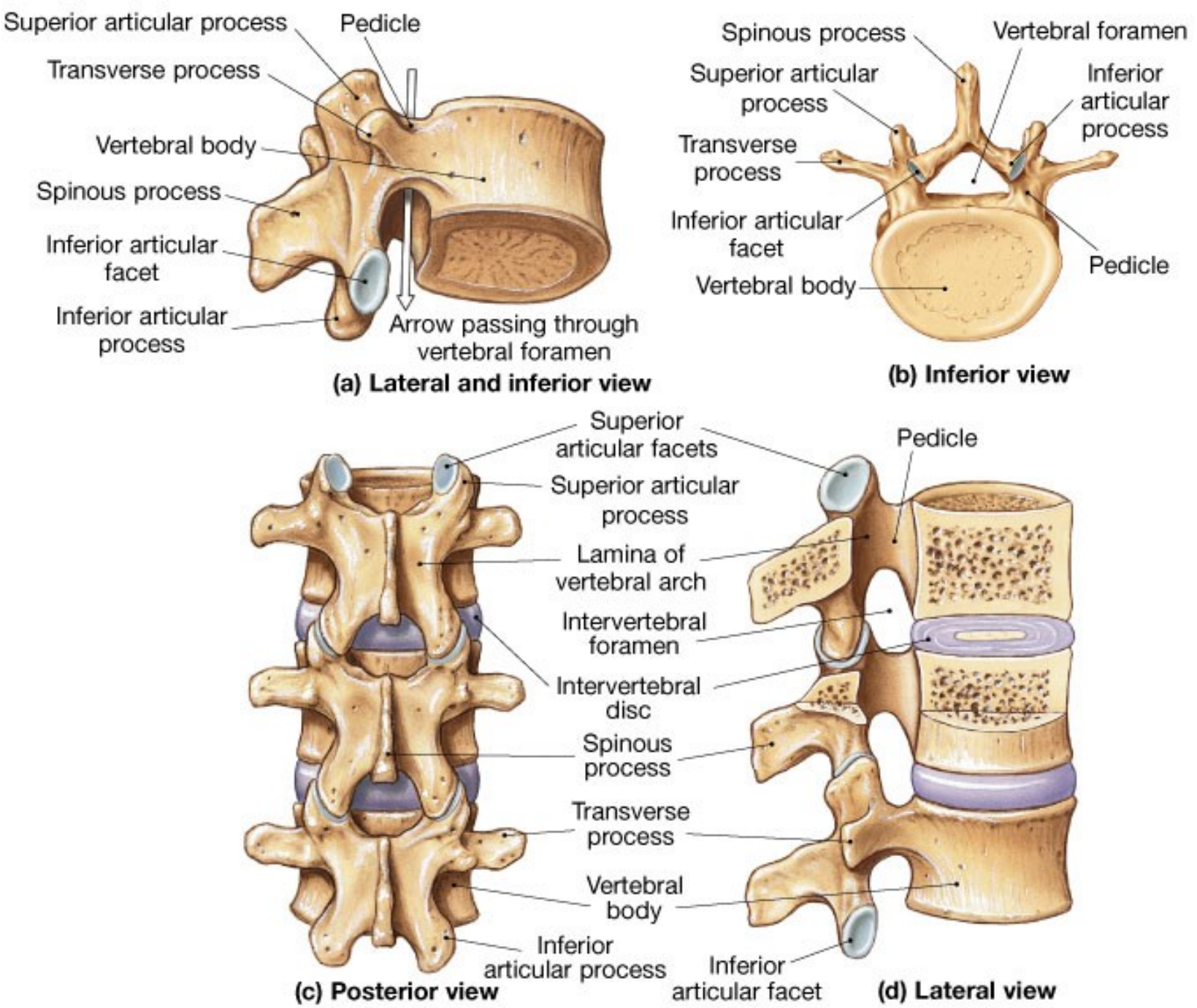

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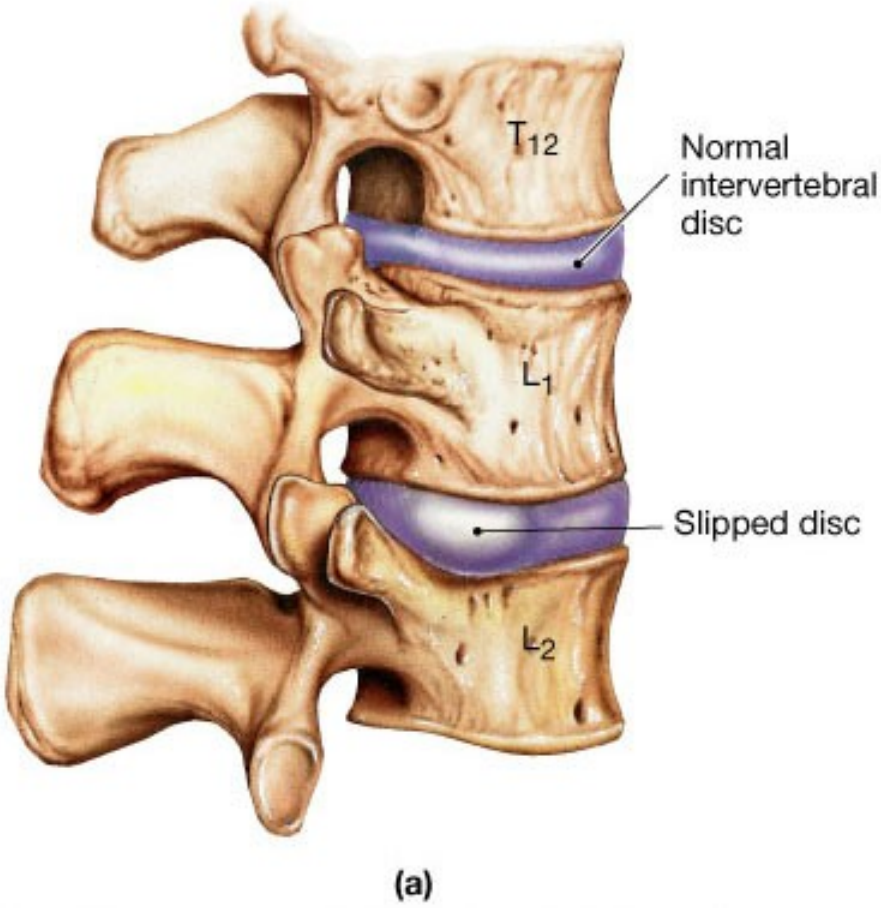
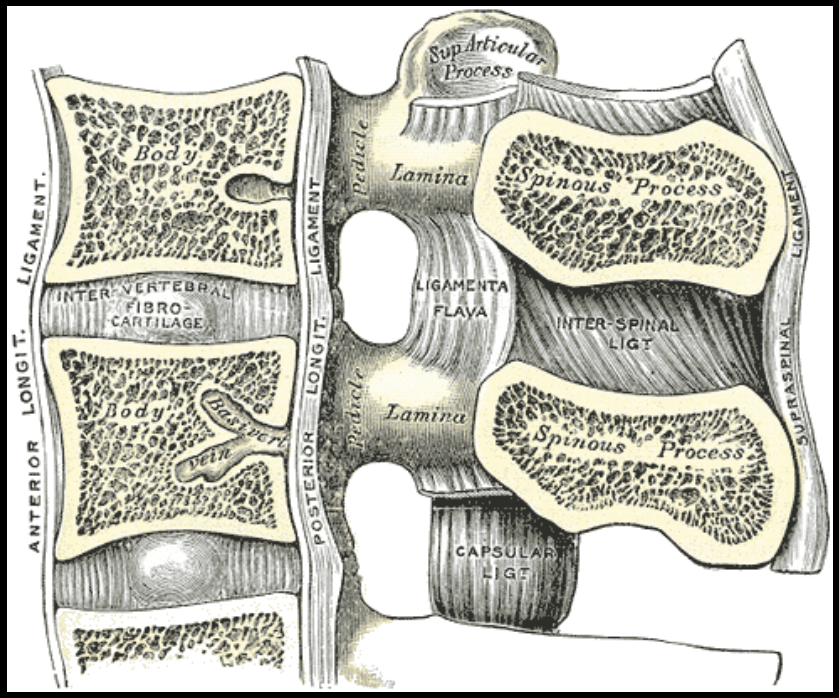
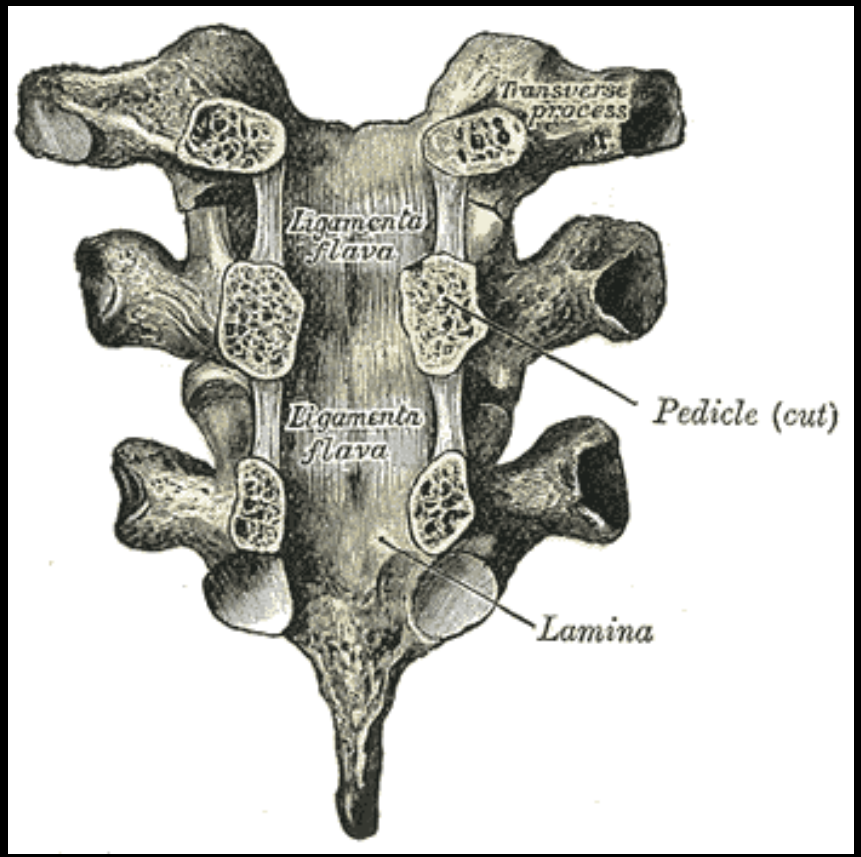


(a)

Ligaments of the Vertebral Column



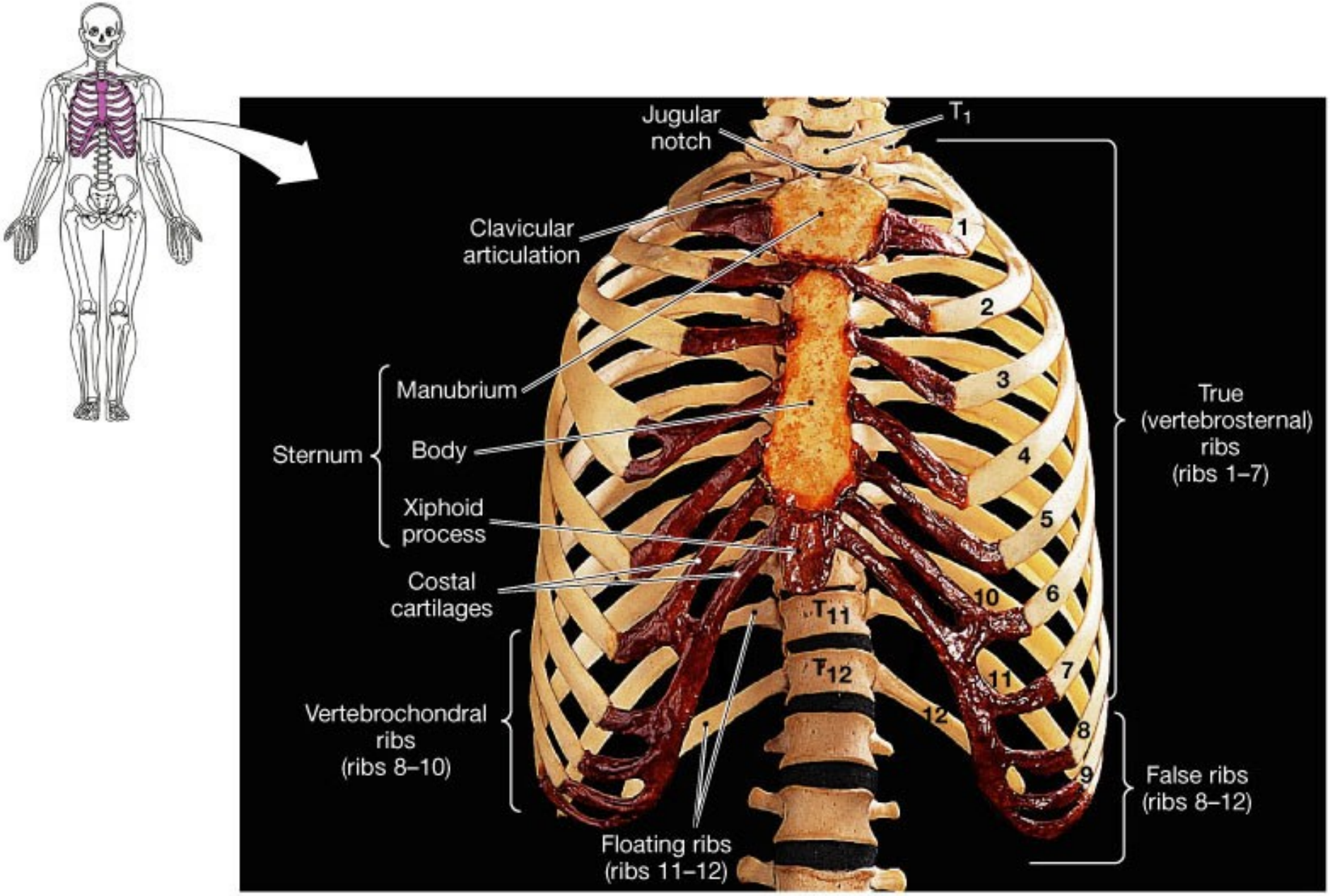


oracic Vertebrae – 12 bones, (T_1, T_2, et

mbar Vertebrae – 5 bones, (L_1, L_2, etc.

cral Vertebrae – 5 bones, (S_1, S_2, etc.)

ccygeal Vertebrae – 4 bones, (Co_1, Co_2



(a) Anteriorview

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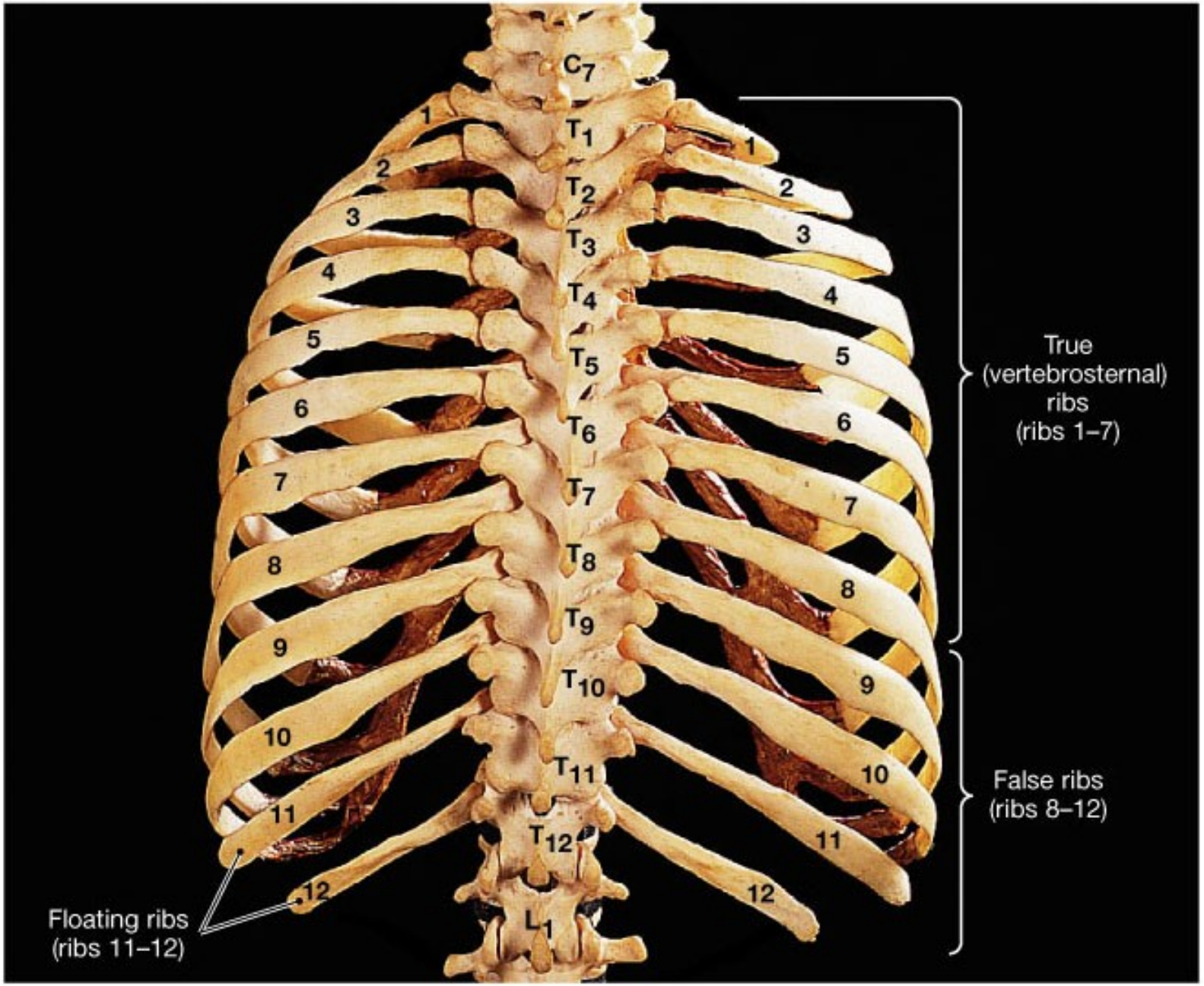

(b) Posterior view

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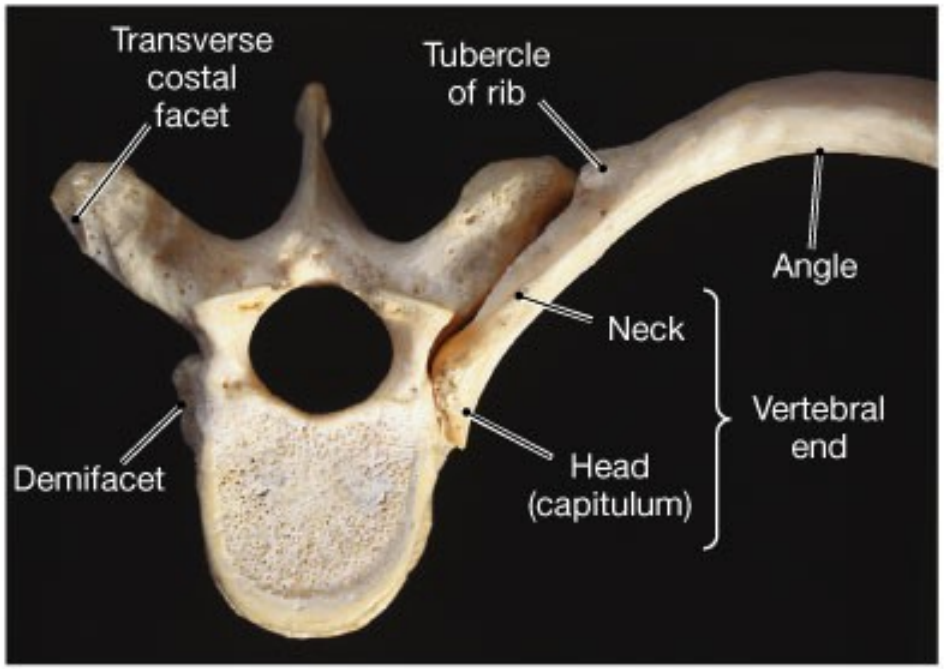
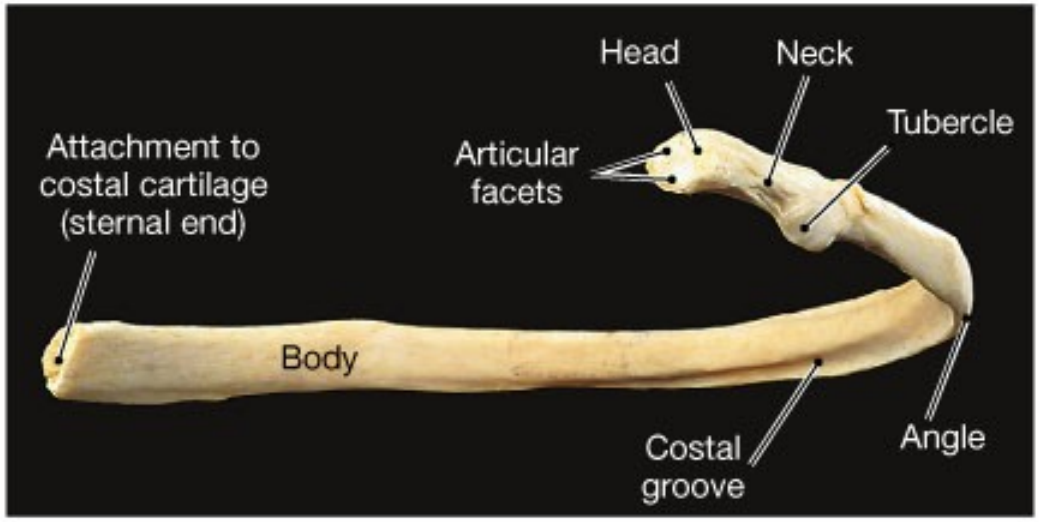


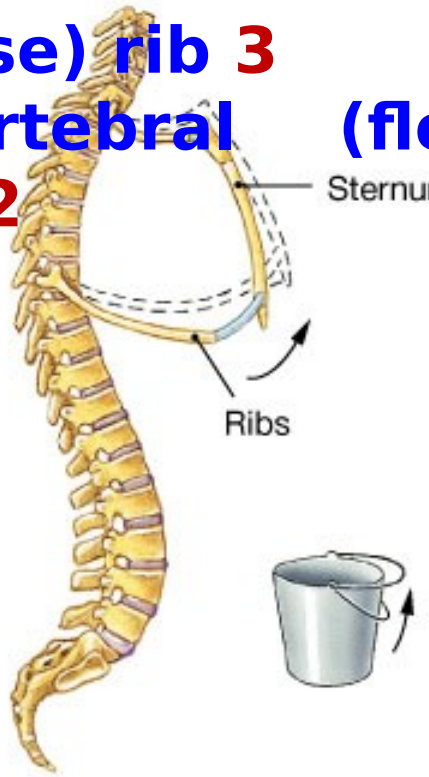
(a) Superior view



(b) Posterior view

There are 3 types of ribs:

- Vertebrosternal (true) rib 7
- Vertebrocostal (false) rib 3
- Vertebral (floating) rib 2



(c)

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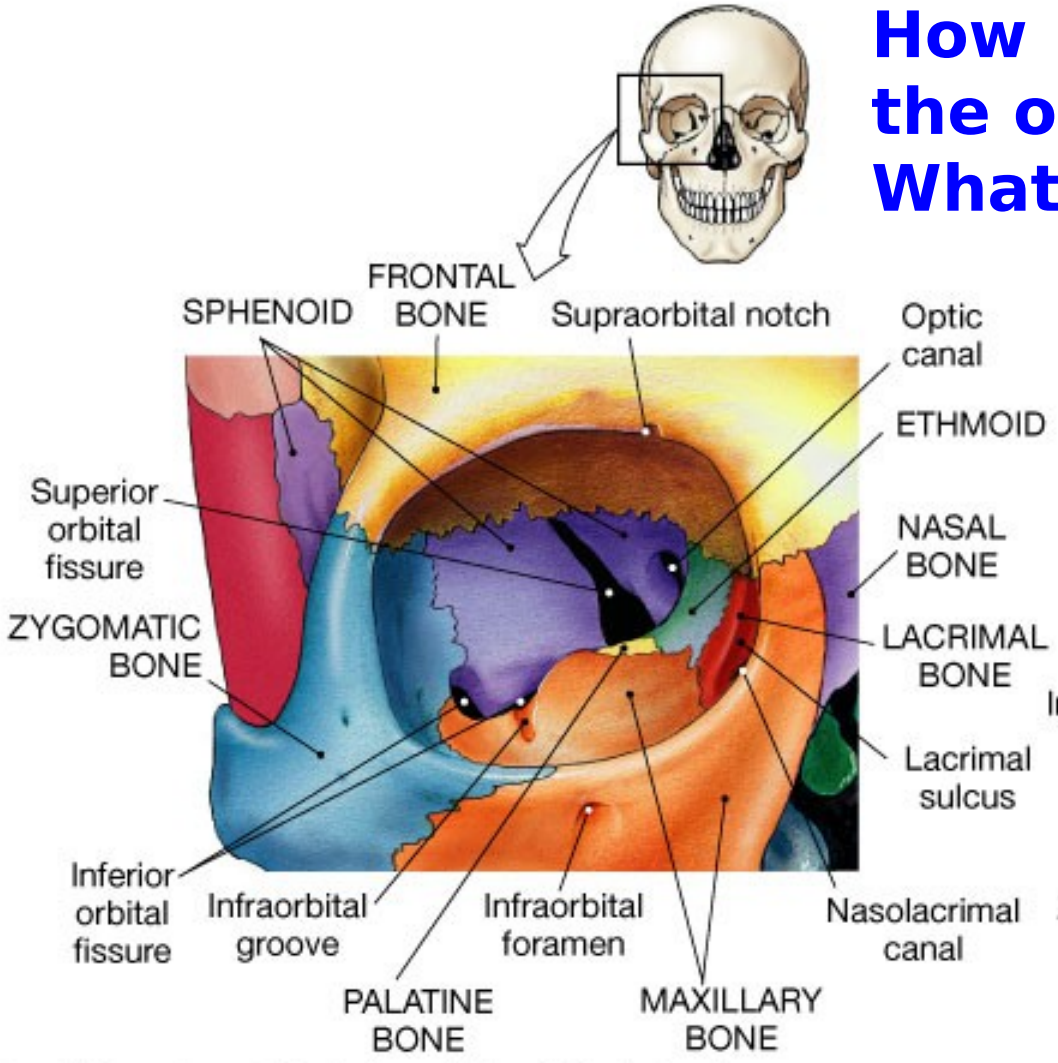
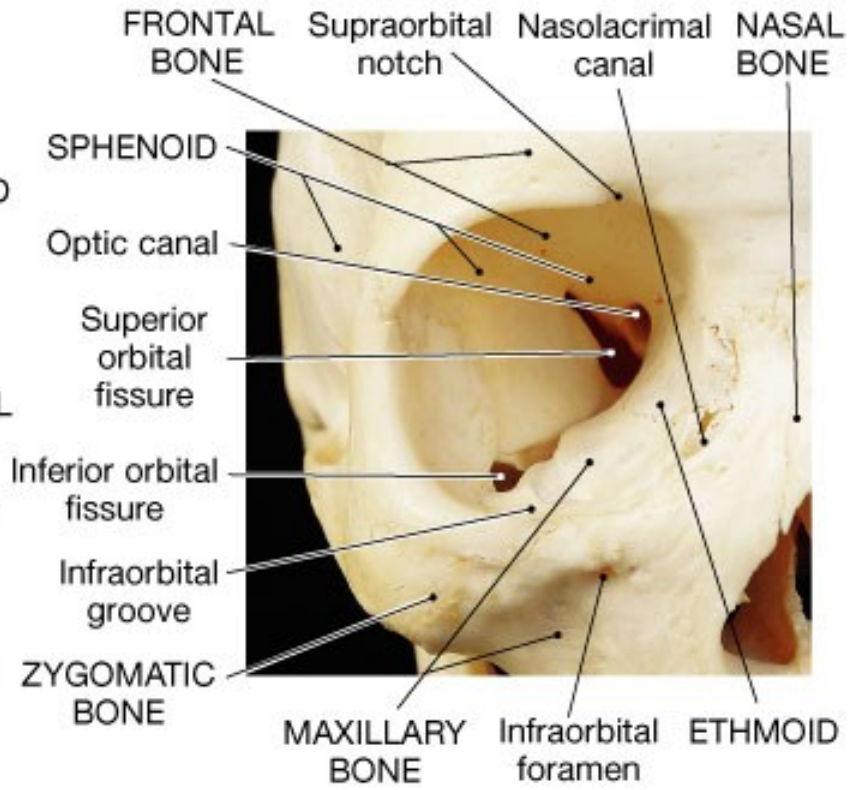
How many bones make up the orbit? What are they?





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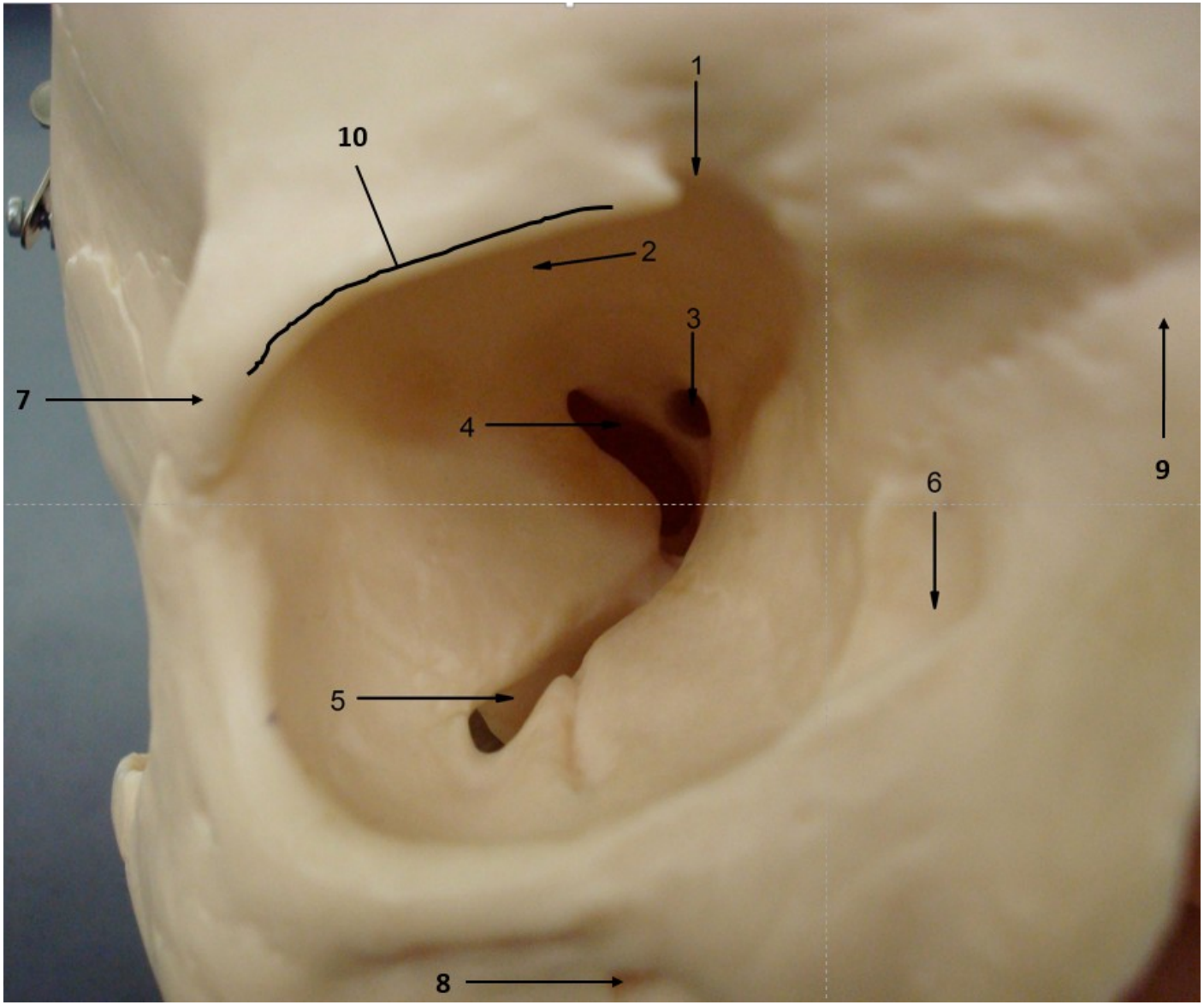
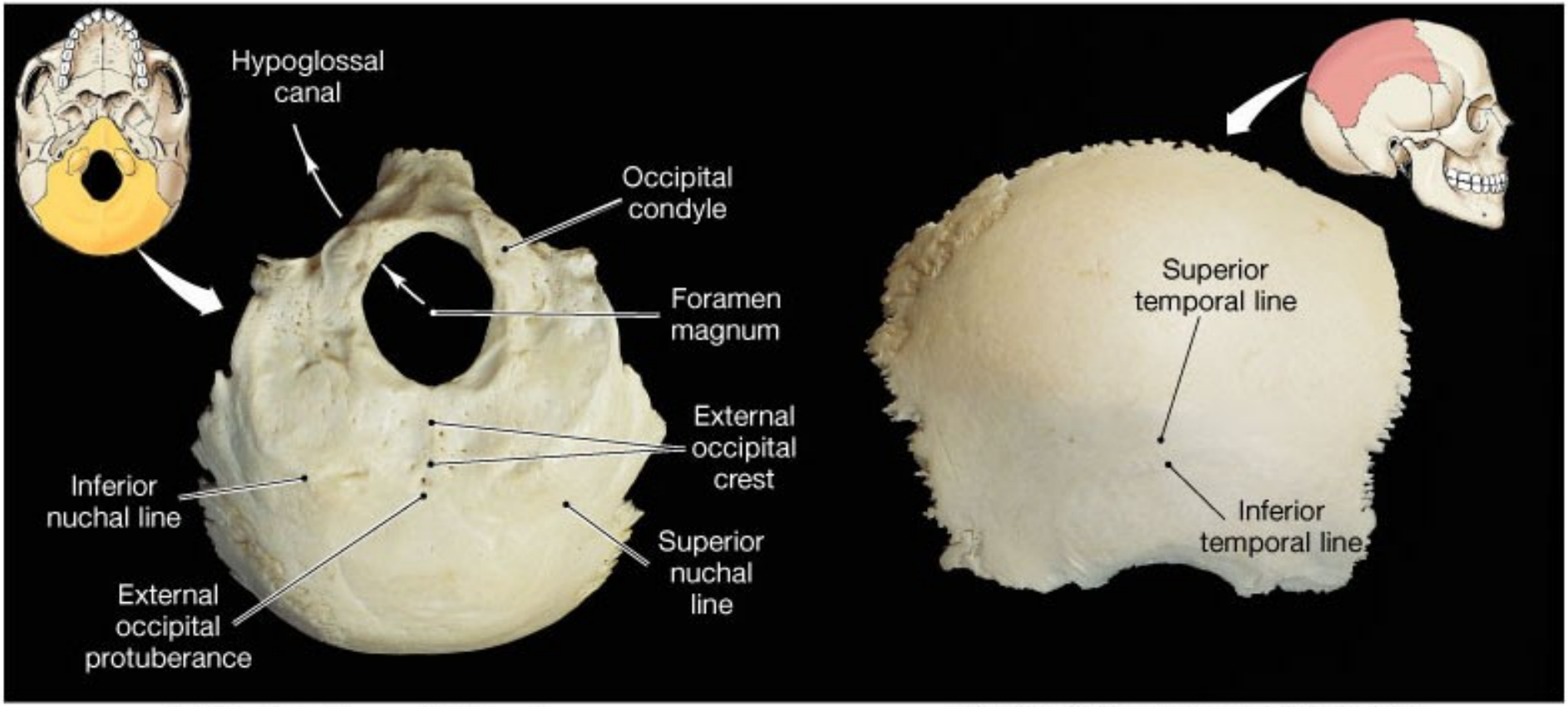


Structures:

1. supraorbital notch
2. orbital surface*
3. optic canal
4. superior orbital fissure
5. inferior orbital fissure
6. lacrimal canal
7. zygomatic process*
8. infraorbital foramen
9. zygomatic process**
10. supraorbital margin

** of frontal bone*
*** of maxillary bone*



(a) Occipital bone, inferior view

(b) Right parietal bone, lateral view

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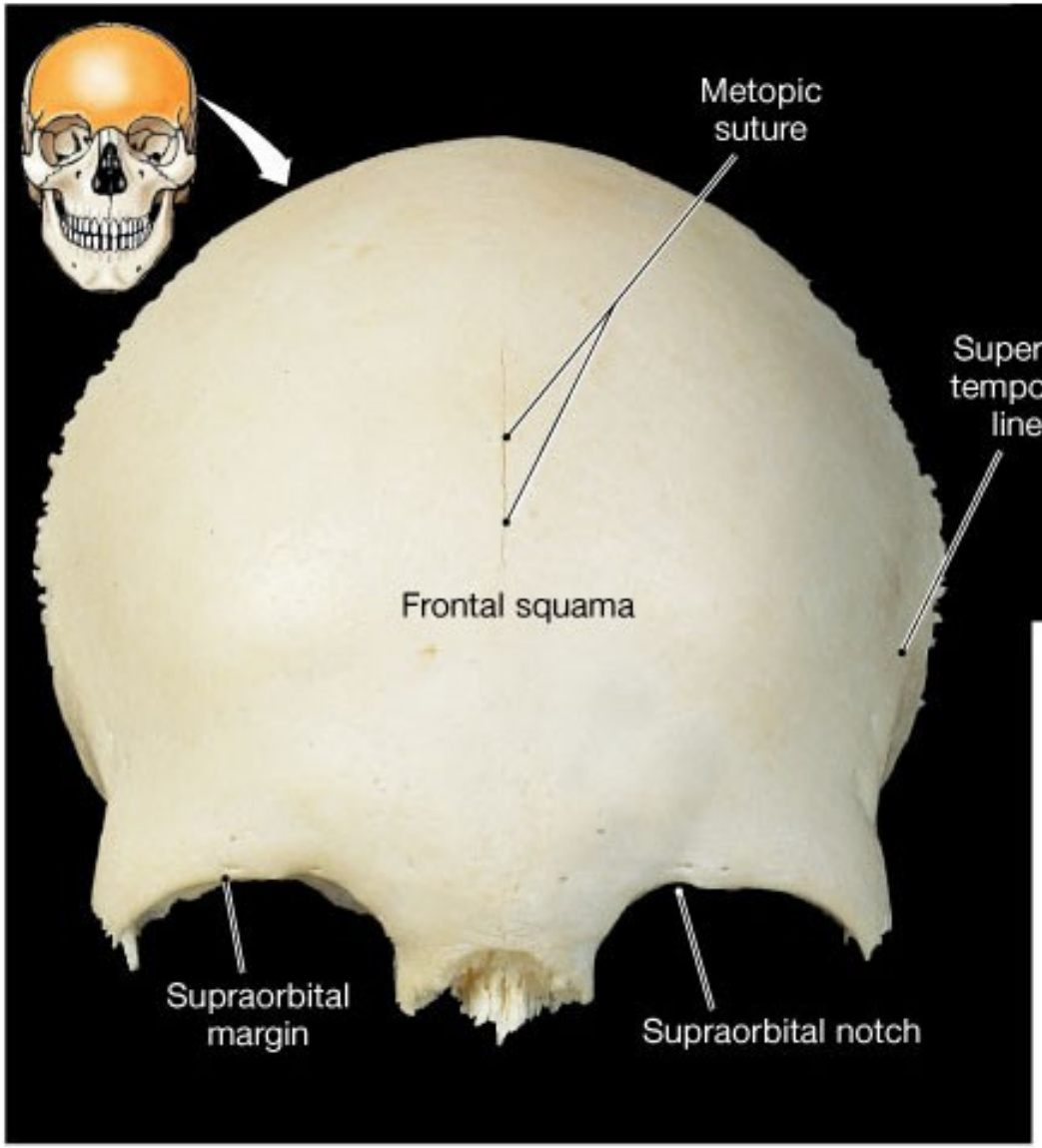
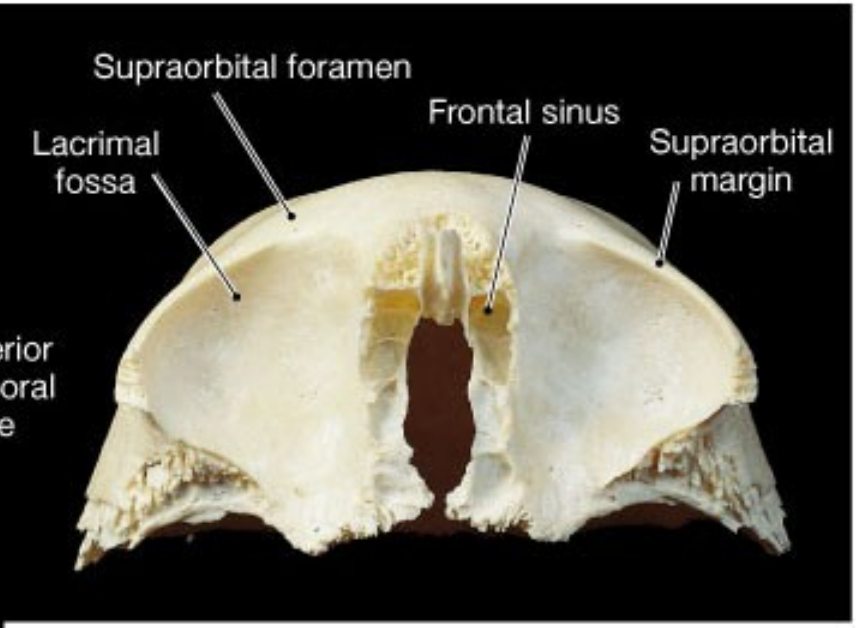


(a) Anterior surface



(b) Inferior (orbital) surface

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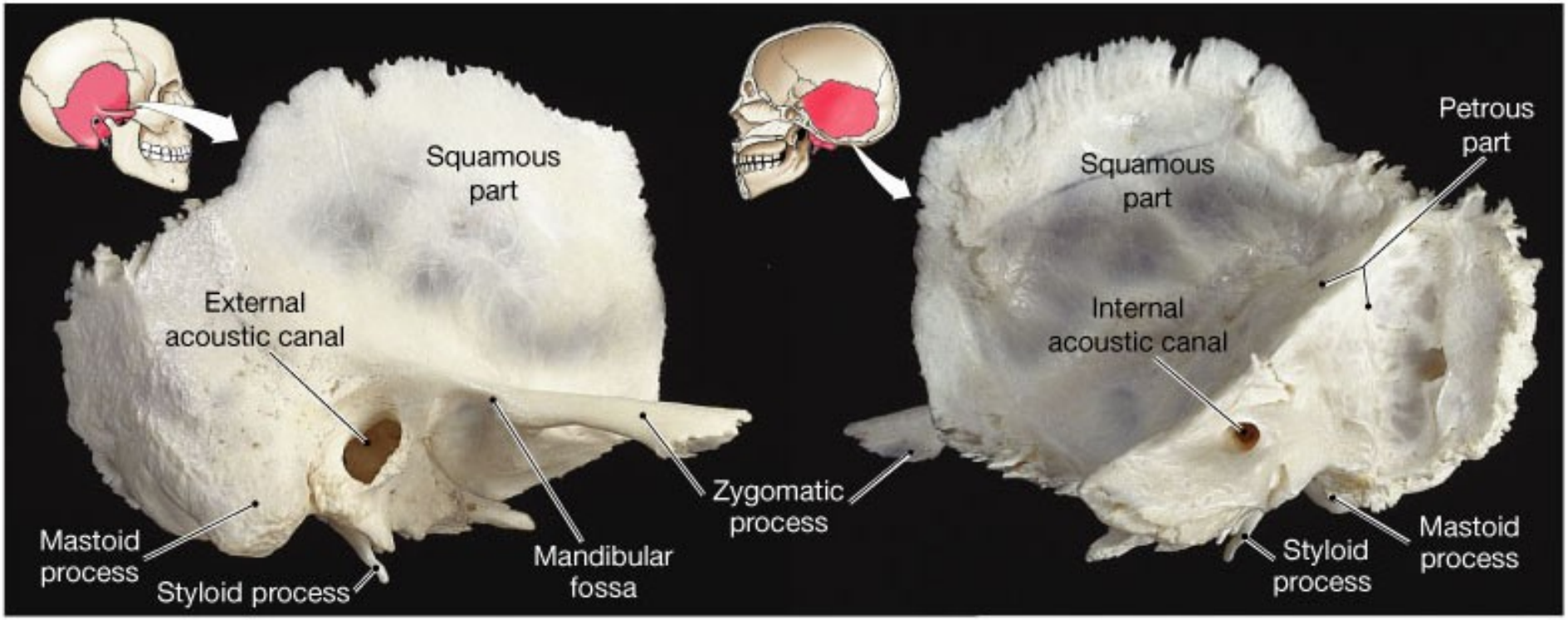
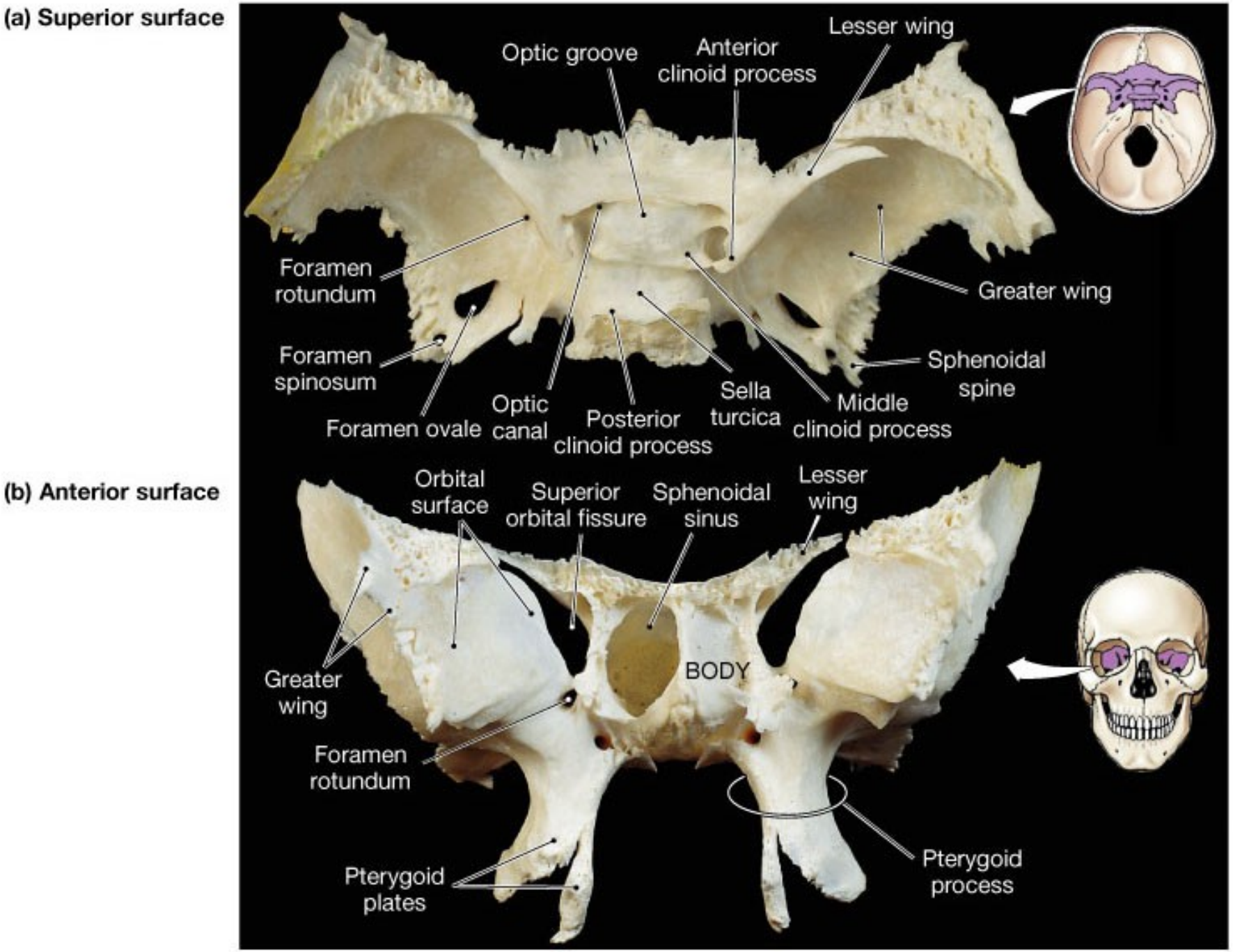


(a) Lateral view

(b) Medial view

(c) Mastoid air cells



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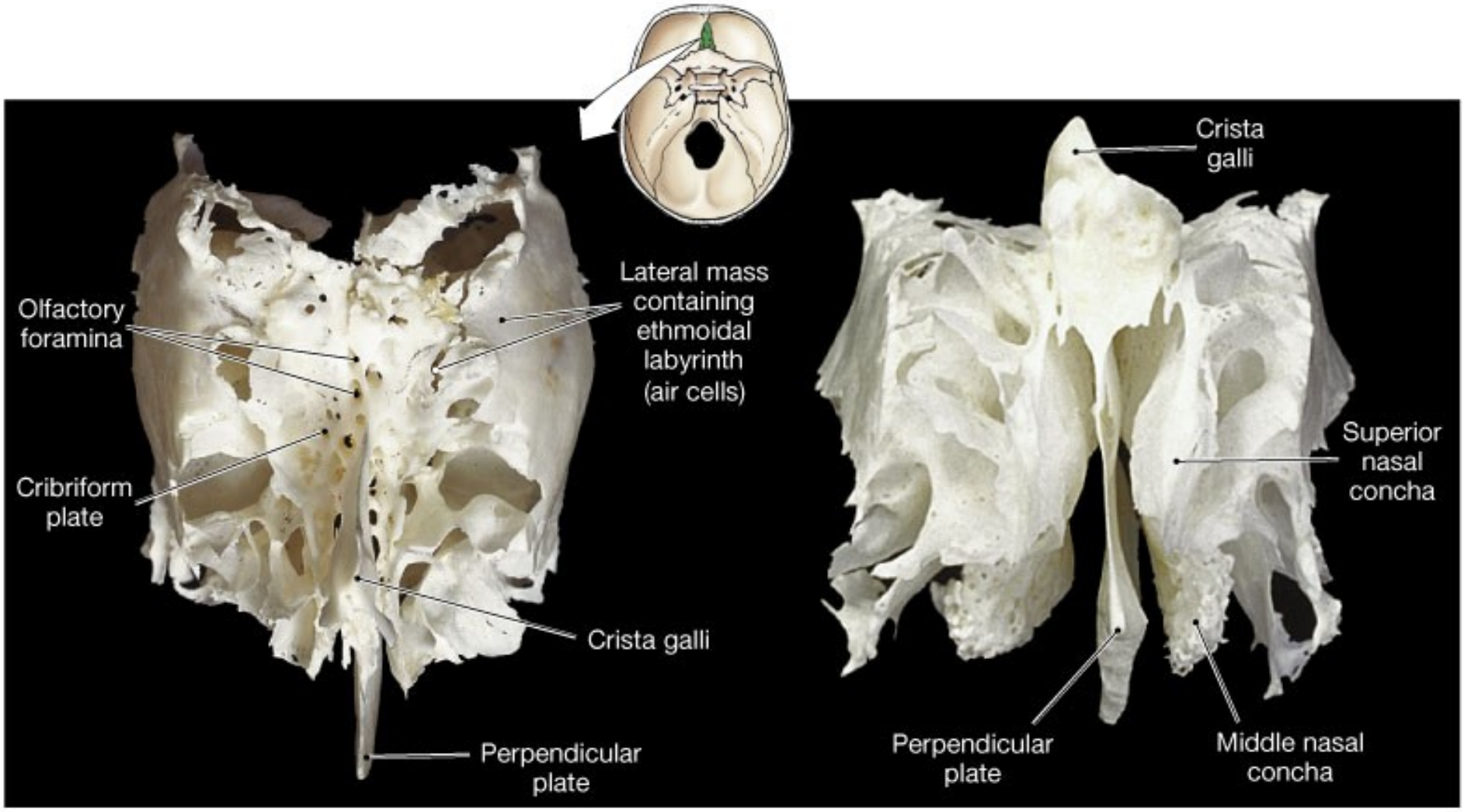

(a) Superior surface **(b) Posterior surface**

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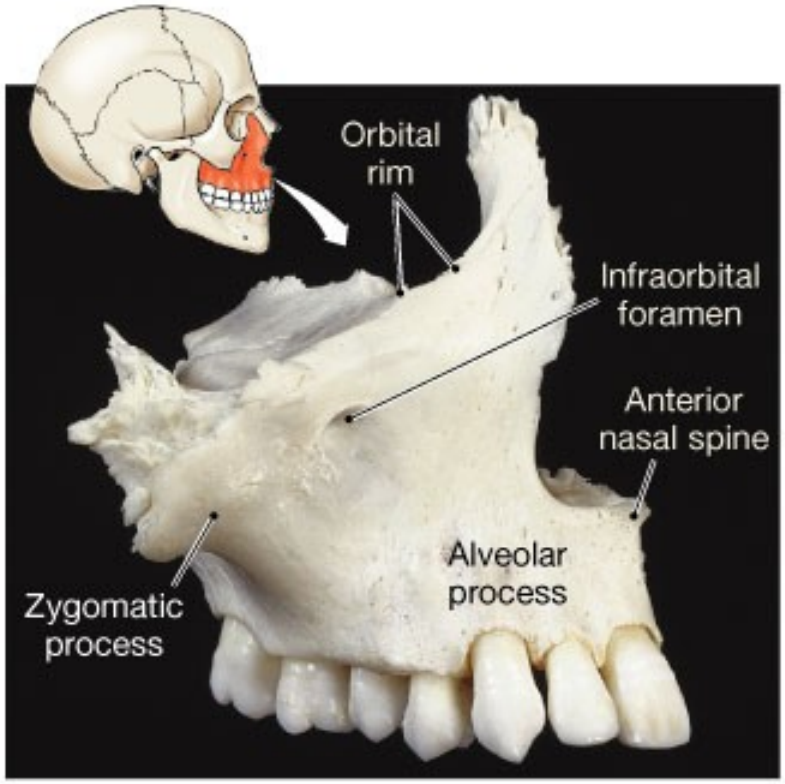
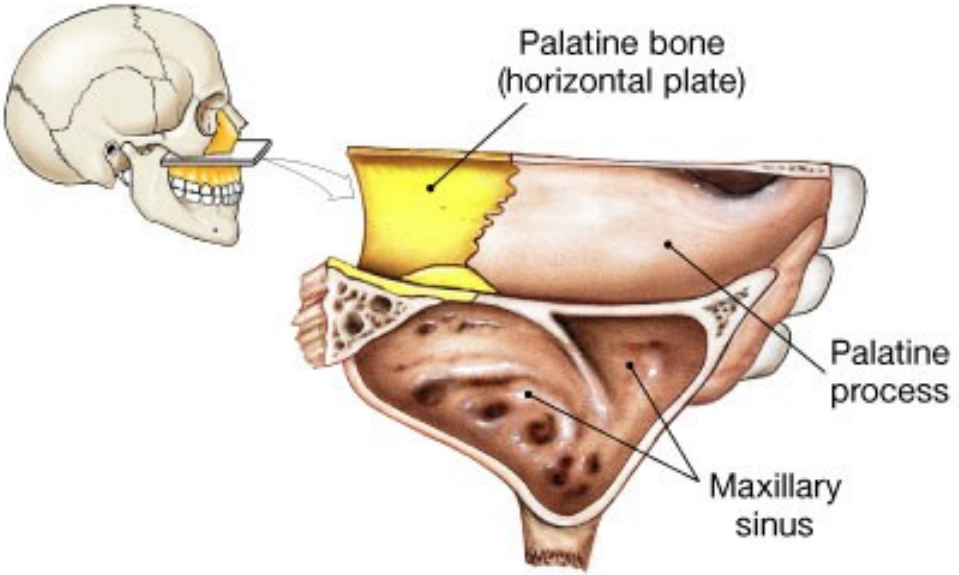
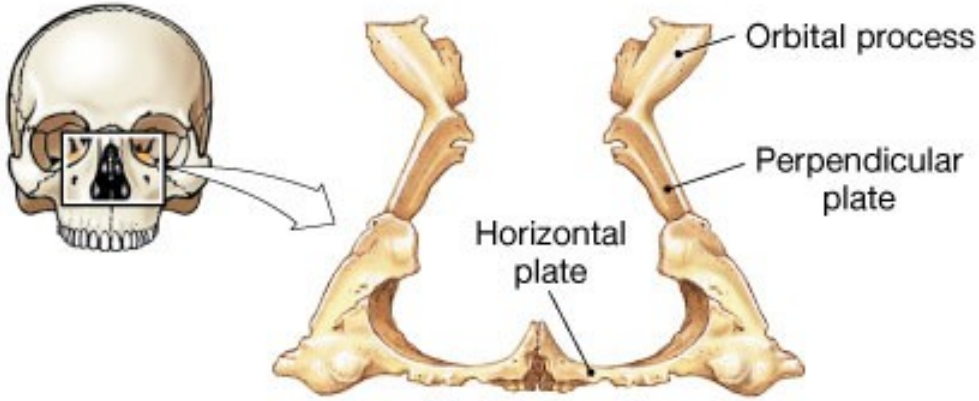


(a) Lateral surface



(b) Horizontal section through maxillary and palatine bones



(c) Anterior view of palatine bones

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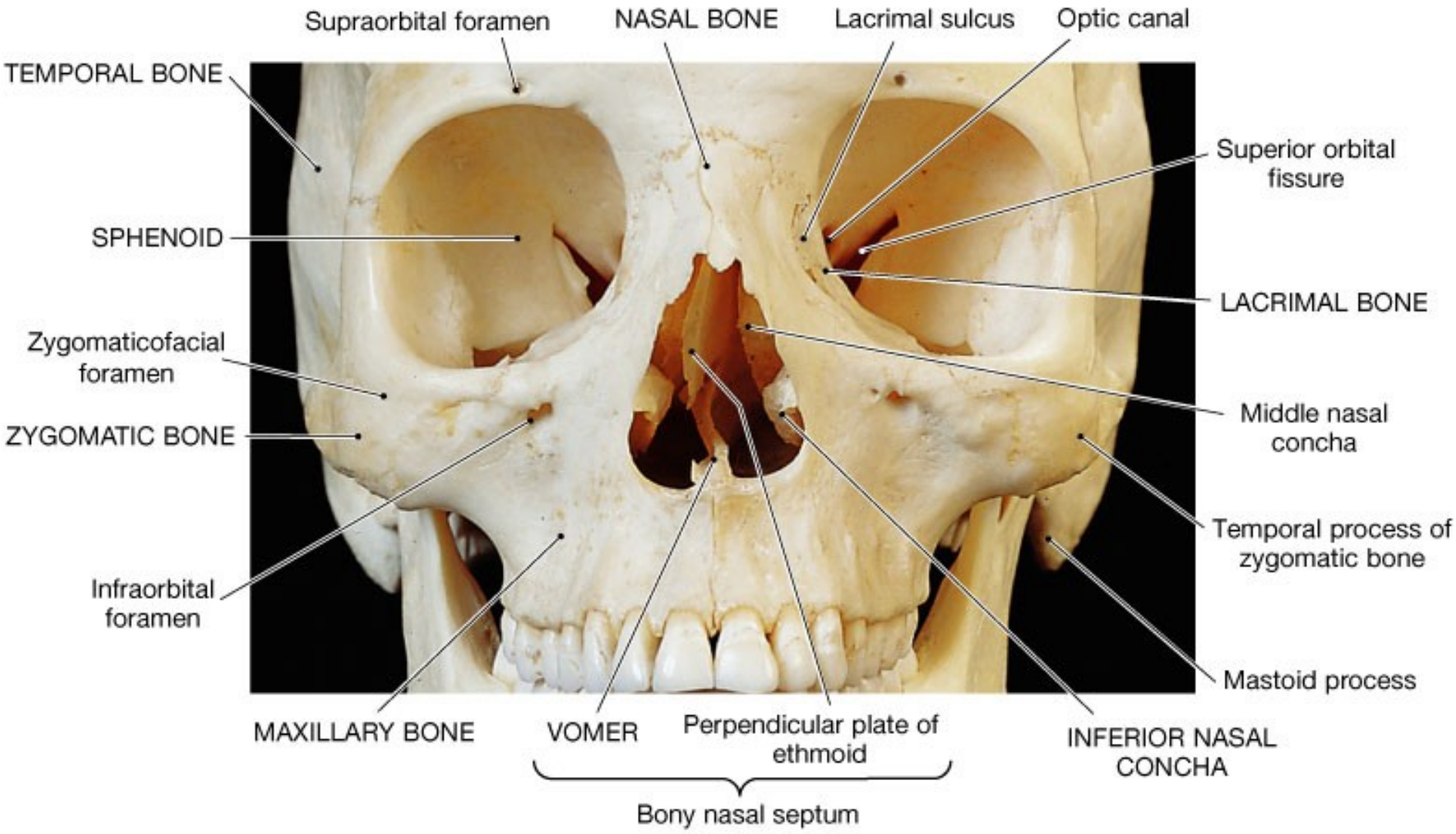

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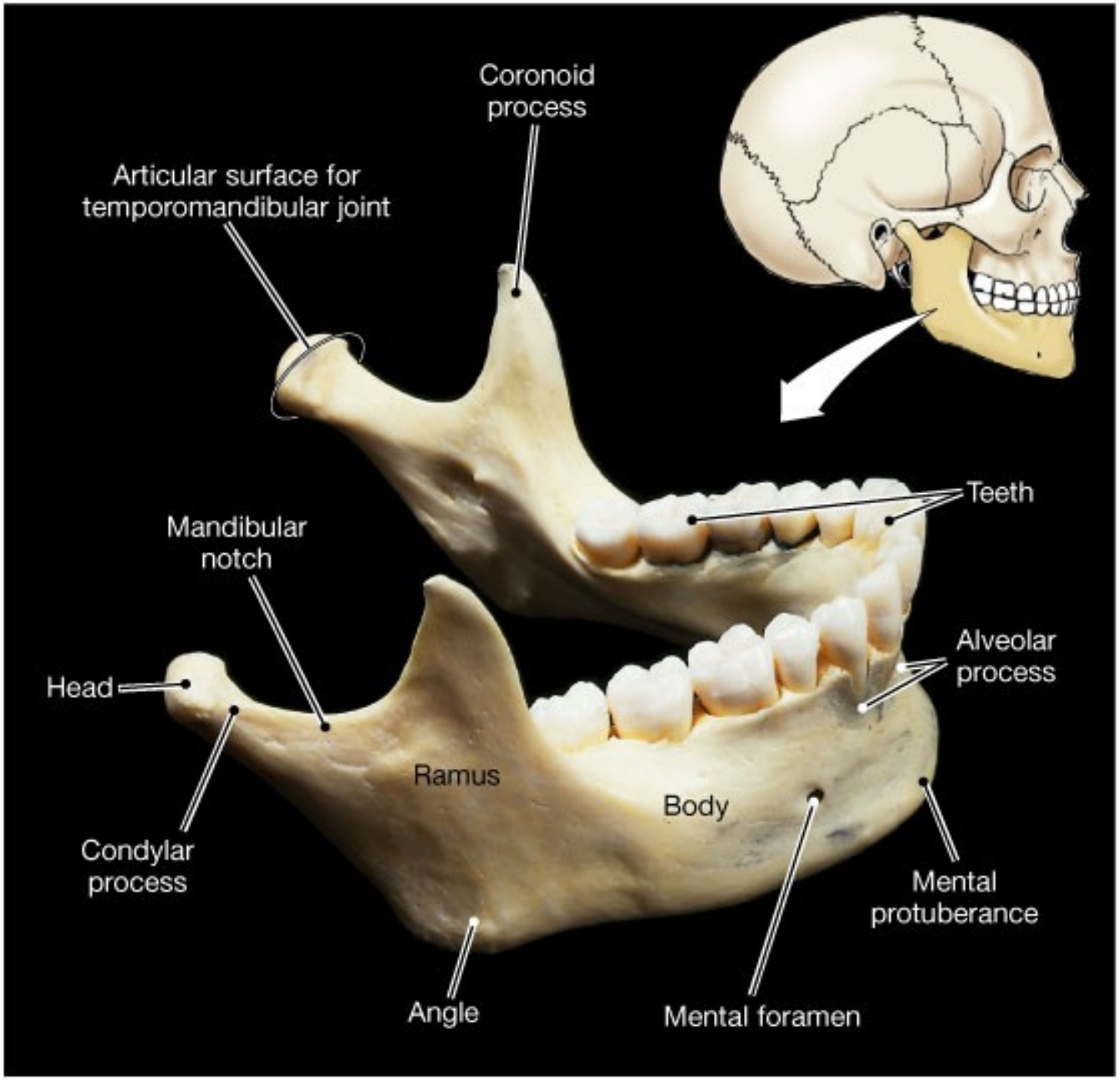

(a) Lateral view

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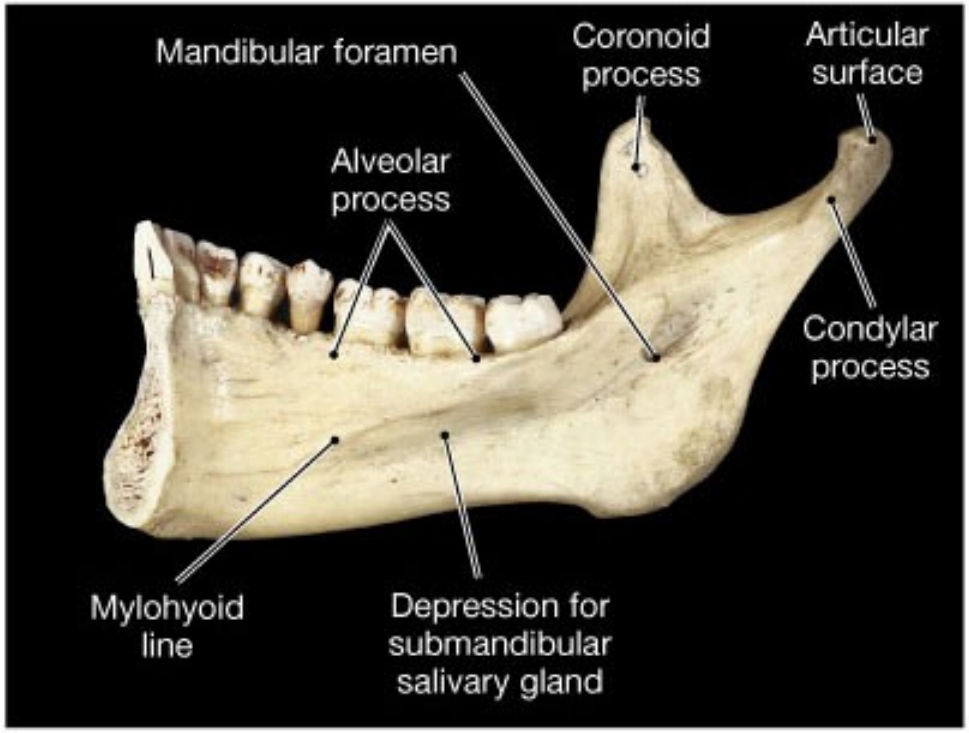
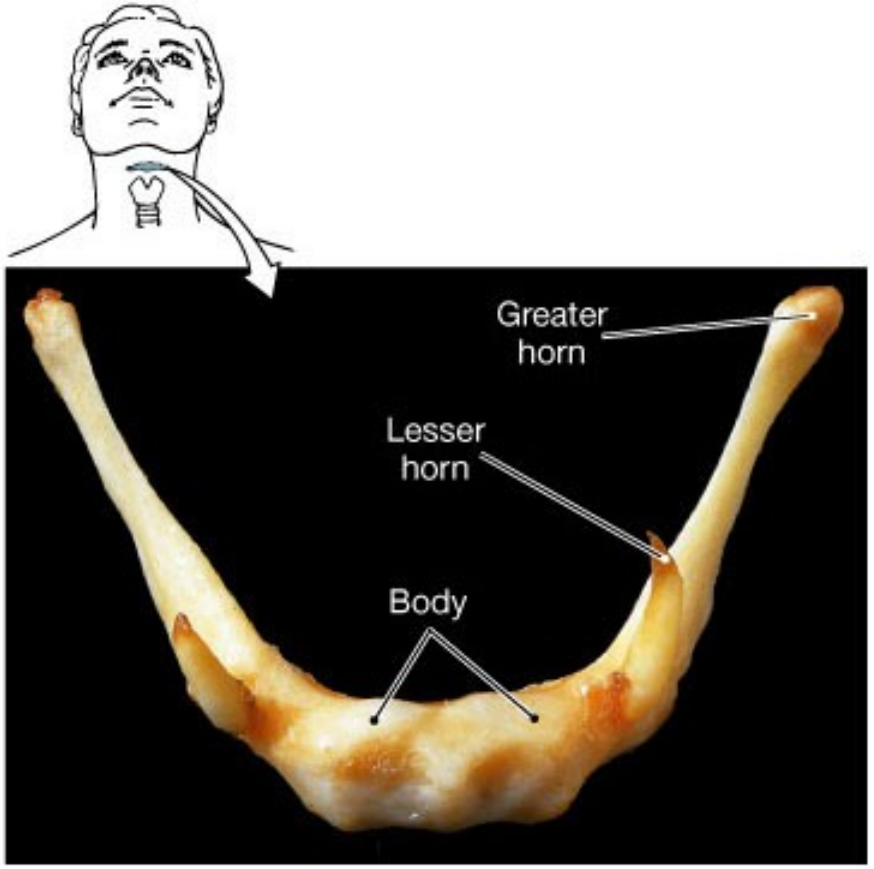


(b) Medial view



(c) Anterior-superior view

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